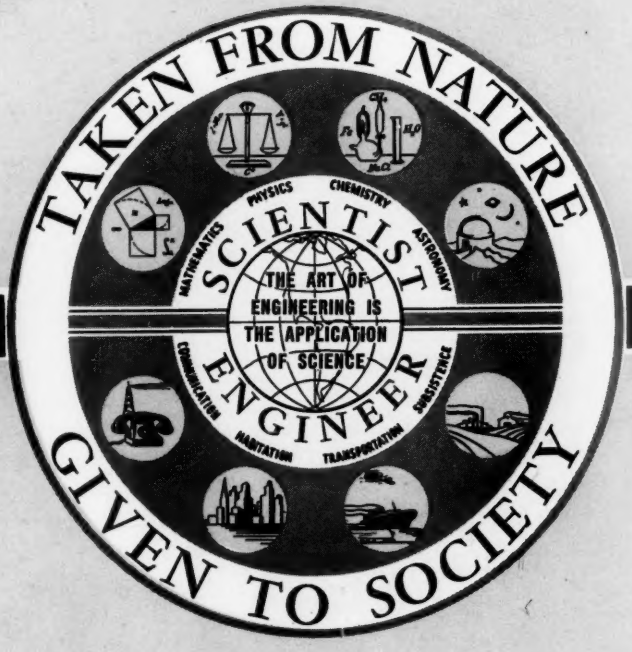
THE AMERICAN ENGINEER



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An Appeal from France

SOCIÉTÉ DES INGÉNIEURS PROFESSIONNELS

To Carry On Despite National Misfortunes

Asks For Continued Co-operation From THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Through the mists and horrors of war comes an appeal from France that suggests the indomitable spirit of the people of that country. Engineering recognizes no man made barriers and the determination to carry on in the face of national calamity bespeaks a warm response from the Professional Engineer of the United States.

Société
des Ingénieurs Professionnels
S I P
50, Rue de Châteaudun - PARIS (9me)
COMITÉ INTERRÉGIONAL
de SAINT-ÉTIENNE
— (Loire) —

St-Etienne, le 16 Avril 1942

Monsieur SHERIDAN, Arthur, V
Ingénieur 3876 Waldo Avenue, New-York

Monsieur:

Monsieur FOURNIER, Président de la Société des Ingénieurs Professionnels de France porte a ma connaissance votre adresse, et cela afin que je puisse vous rassurer sur la continuation de l'activité de cette Société.

Depuis la défaite de la France, la France est divisée en deux zônes l'une dite, zône occupée, l'autre dite zône libre.

Pour chacune de ces deux zônes un comité a été créé. Pour la zône occupée, Monsieur FOURNIER Président de la Société des Ingénieurs Professionnels de France est chargé par le Conseil d'Administration de notre Société de veiller a l'activité, tant morale que scientifique.

Quant a la zône libre, c'est au Comité Interrégional de St-Etienne, composé de cinq Membres, et qui sont également Membres du Conseil d'Administration de gérer la Société.

Comme il n'est pas possible a notre Président de communiquer avec votre Pays, celui-ci a chargé son adjoint de la zône libre, de se mettre en relation avec nos amis des Etats-Unis.

Malgré les malheurs qui ce sont abbatus sur notre France, nous souhaitons que les relations intellectuelles qui existaient entre la Société des Ingénieurs Professionnels d'Amérique U.S.A. et la Société des Ingénieurs Professionnels de France, puissent être continuées, malgré les heures pleines de douleurs auxquelles sont soumises nos deux Pays.

En tant que Président du Comité Interrégional de St-Etienne de la Société Francaise des Ingénieurs Professionnels et sur l'ordre de son Président Général Monsieur FOURNIER. Je fais appel a votre amabilité, pour que continue l'oeuvre si magnifique que nous avons ébauché au temps oú la paix régnait sur nos deux pays.

J'ose espérer que notre appel sera entendu et compris de nos Amis Américains, et que, nous aurons le plaisir de lire, avec le même agrément que jadis, vos oeuvres techniques si appréciées par nous, Français.

Au nom du Conseil d'Administration, S. I. P. je vous demanderai de bien vouloir donner de vos nouvelles a Moi-même: "Monsieur BRET Ernest, Président du Comité Interrégional de St-Etienne (Loire) de la Société des Ingénieurs Professionnels a: l'Homière, Maison Rocheton,—*UNIEUX (Loire)* FRANCE.

Société
des Ingénieurs Professionnels
S I P
50, Rue de Châteaudun - PARIS (9me)
COMITÉ INTERRÉGIONAL
de SAINT-ÉTIENNE
— (Loire) —

Monsieur SHERIDAN, Arthur, V — St-Etienne, le 16 Avril 1942
Ingénieur 3876 Waldo Avenue, New-York
M. Ernest BRET l'Homière, Maison Rocheton
UNIEUX (Loire) FRANCE

The following is a liberal translation of the original communication:

Sir:

Mr. Fournier, President of the Society of Professional Engineers of France informs me of your address in order that I may be able to reassure you of the continued activity of this Society.

Since the defeat of France the country is divided in two zones; the one termed the Zone of Occupation, the other the Free Zone.

For each of these zones a committee has been formed. In the Zone of Occupation Mr. Fournier, President of the Society of Professional Engineers of France has been entrusted by the Administrative Council of our Society with the supervision of society activities, ethical as well as scientific.

For the Free Zone, the Interregional Committee of St. Etienne, composed of four members, who are also members of the Administrative Council, is empowered to direct the Society's affairs.

As it is not possible for the President to communicate with your country, he has called upon his associate in the Free Zone to establish contact with our friends of the United States.

Regardless of the misfortunes which have befallen France, we trust that the cultural relations which existed between the Society of Professional Engineers of the United States of America and the Society of Professional Engineers of France may be maintained despite the unhappy situation which presently exists in both countries.

As President of the Interregional Committee of St. Etienne, of the French Society of Professional Engineers, and at the direction of the Society's President General, Mr. Fournier, I bespeak your good will in order to continue the splendid work under way when peace reigned in our two nations.

I venture to hope that this appeal will be heard and understood by our American friends and that we shall again have the pleasure of reading your technical works which are much appreciated by Frenchmen.

In the name of the Administrative Council of the Society of Professional Engineers of France I would request that you kindly address your news to the writer, Mr. Bret Ernest, President of the Interregional Committee of St. Etienne (Department of the Loire) of the Society of Professional Engineers a: L'HOMIERE, Maison Rocheton, UNIEUX (Loire) FRANCE.

The Society of Professional Engineers of France (S. I. P.) is a counterpart of the National Society of Professional Engineers (N. S. P. E.) in this country. Cordial relationships between these two Societies had been developed during recent years and frequent exchanges took place prior to the fall of France.

Let us as Americans remember the glorious history and the unsurpassed contributions to civilization made by the French people. Let us try to appreciate their predicament and their problems and in so doing prepare for the day when the Engineer of France and his colleague in America will again be collaborators in the march of progress and the pursuit of Peace on Earth.

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PUBLIC RELATIONS
CONDITIONS AND PRACTICES
APPLICABLE TO ENGINEERS
As Viewed by the Publisher
of
THE AMERICAN ENGINEER

Douglas W. Clephane

PROPER handling of public relations presents somewhat difficult problems in all professions. A man engaged in ordinary commercial work in most fields is not bound by the same ethical restrictions that apply in the engineering, legal, medical and other professions. He is free to obtain all desired publicity and recognition of his accomplishments in a multitude of ways, but the professional man is limited by ethical considerations. The problem is further complicated for the professional man because in most professions there is no generally accepted written code of ethics. Therefore he must lean over backwards to be sure he does not overstep the standards of his profession.

However, an engineer must build his career upon other people having knowledge of his ability, qualifications and accomplishments. He can be the best qualified man in his field, but that does him little good if the right people do not know it.

In this article the writer will endeavor to outline some of the methods which outstanding engineers, doctors and lawyers have used to bring their ability and accomplishments to the attention of people who have need of these services.

First, except for certain professional directory listings, it must be remembered that the ordinary methods of announcing the merits of a product of service through paid advertising and other promotion means are not considered ethical in most professions. The engineer, doctor and lawyer therefore must use more subtle means of getting attention. We have all heard that if a person builds a better mouse trap, the public will beat a path to his door regardless of where he is. Unfortunately that is not true under modern conditions. Far too often the public lines at the door of a man who has an inferior product or service while nearby is a far better qualified individual whom the public never knows about.

THE AUTHOR

Douglas W. Clephane is now associated in the publication of the American Engineer. He is a former Washington newspaper man with wide experience in covring such assignments as Congress and the White House. He has been advertising and public relations director of several large corporations and has conducted public relations work in many fields.

But there are many things an engineer can do to let the right people know about his ability.

Professional Recognition

As in most professions, an engineer's standing among his associates is the cornerstone upon which he must build his career. In the medical, legal, accounting and other professions, the various states rigidly control the qualifications a man must have and maintain to be a legally recognized member of that profession. The same thing is somewhat new in the engineering profession and there is a great difference at the present time. No doctor can treat a patient unless he is licensed in his state. No lawyer can render legal service unless he is admitted to practice by the courts. But while there are legal requirements for engineers in practically all states and rigid qualifications in many, the laws frequently permit too many exemptions.

When an engineer does obtain his license, he has legal recognition from his state and the stamp of approval of his own profession that he has the basic requirements for successful engineering work. Many large corporations now tell all their young engineers that if they expect to rise in that organization, the company strongly suggests they get and keep their license in good standing.

But while a license gives the engineer the right to use the initials PE, that merely means that he has fulfilled the minimum requirements. The next step is to obtain the recognition of the fellow members of his profession. Membership and participation in the work of the professional and technical societies of his profession is one of the quickest ways for any professional man to become known and such membership is further public recognition that his own profession considers him qualified.

In the engineering as in most other professions, it is

usually the most competent members of that profession that are most active in their own professional organizations. These men are not entirely unselfish in giving their time and efforts to their profession. The work of such organizations as the National Society of Professional Engineers, guards the future of each member of the engineering profession. The more work that organization is able to do, the stronger becomes the position of each member of the profession.

But the outstanding engineers have another reason for working actively in their professional and technical societies. It is through the acquaintances they make, the discussions they have with fellow members that other members of the profession learn of each others abilities. It is naturally to their friends whom they admire and respect that they turn to when professional help is needed rather than to a stranger.

Community Work

It seems strange to many that professional people as a whole predominate far more than their numerical numbers alone would warrant in all civic, philanthropic and other work for the general welfare of the community. Of course, professional men and women are fitted by education, training and experience to be leaders. They have become professional men not so much for the financial rewards as from the desire to contribute their part toward the welfare of their fellow men.

While few professional men ever consider the return to them for the many hours of work they donate to their profession, community and nation, there still is a very definite return.

Every philanthropic enterprise is directed by the leaders in the community. Every such organization wants and needs more men and women to carry on essential unpaid work. But here again such service is not entirely without its reward. If the president of a steamship company is planning to build a new dock terminal which presents unusual difficulties, it is only natural that he will discuss such a project with an engineer who is a fellow member of the board of directors of a charity.

When you need a lawyer, you do not go to the telephone book and pick a name from the classified list at random. You usually go to a friend whose reputation you know from personal contact and who at some time has probably discussed interesting angles of cases with you that may be somewhat similar to your problem.

Today every qualified man and woman is being called upon to donate more and more of his time to some form of defense or war activity. Such calls upon engineers and their opportunities to serve are too numerous to mention. Right now every local Civilian Defense Council is appointing one or more engineers to render technical advice to their local organizations on how best to handle such problems as disrupted water, power and communication services, how best to protect the public from partially demolished buildings. Here is one place where the engineer's training is sorely needed by his community. But here again, such service is not without its reward. He will work with the outstanding leaders of his community in such service. These people will not forget the man who gave liberally of his time and effort and who showed unusual capacity to handle difficult technical engineering problems. It is only natural that such men will be called in on post war construction and reconstruction jobs.

Talks And Addresses

Every town and city has numerous service clubs such as the Kiwanis, Rotary, Lions, Exchange and other organizations. A regular feature of these weekly luncheon meetings is a short talk by some person usually not a member of the club on a subject of general interest. The speakers committees of these organizations are always interested in securing men who can make interesting talks. I can think of no group that has more material to draw upon than professional engineers. Such talks are often reported by the local press. Most engineers try to avoid making what they call speeches. Too often even the making of a short talk is considered to require a certain technique. Such is not the case. There is little difference between telling a friend on the golf course about some unusual engineering problem you have encountered and giving the same information to a group at a luncheon or dinner.

Many state societies and chapters of the NSPE as well as the engineering technical societies have educational committees, one function of which is to arrange for qualified speakers to address schools and colleges in their localities. Such talks before student groups do much to bring the proper material into the profession and to give the public an insight into the ideals of the engineering profession. You can be certain that practically every such student will carry home a large part of the meat of the talk and some day when daddy is considering the letting of a contract he may remember the engineer that took the trouble to inform his son about the ideals of his profession.

Many professional men are notorious joiners, lawyers possibly being the leaders in this field. They do it because they have found that the more people that get to know them, the more chance there is of some of these eventually giving them legal work. Many professional people overdo their organization work for selfish reasons. A mere member is of little value to any organization. It is those few members who devote their time and efforts to the work of the organization that are of value to their community and who eventually reap some personal reward.

Handling the Press

Engineers being by nature and training conservative and being used to detailed accuracy are often somewhat suspicious of the press and seldom have a thorough understanding of giving proper co-operation to the press.

There is a good local and often national newspaper story on every local construction job, but seldom does the public get the full story. Most commercial organizations now have a public relations expert to see that their company gets as much favorable mention as possible. Few engineers or engineering firms can have such personnel available, but every professional man should have a clear understanding of what constitutes news, how to get it

(Continued on page 23)

DO BARRIERS EXIST

REJOINDER TO THE CONTENTION

RACIAL, SOCIAL AND POLITICAL INHIBITIONS

RETARD HUMAN WELFARE AND PROGRESS

by

Engineer F. W. Preston

The appended material is submitted as a questioning response to the article by Engineer Jacob Mark, which appeared on Page 3 of the July-August Issue. The American Engineer, while assuming no responsibility for the opinions expressed in its columns, is glad to publish properly prepared rejoinders to the views of its contributors.

(The writer submits his comments as a result of personal observations in the countries and cities cited.—Editor)

THE Author and *American Engineer* invite comments on an article entitled "A World of Barriers" by Jacob Mark in the July-August 1942 issue of *The American Engineer.*

We can sympathize a good deal with Mr. Mark's emotions and regrets, but I feel sure that some of the facts are either not what he thinks they are or that they are not seen in proper perspective. This is particularly the case when he is dealing with the countries of the Southwest Pacific.

For instance, he regrets that Australia has only six and a half million people, less than New York City. This is somewhat like regretting that a child of ten is not as large as a man of twenty. The country now known as the United States has been open to white settlement for over three hundred years. The first settlement in Australia was made just over one hundred and fifty years ago.

During the first one hundred and fifty years of its settlement, the United States accumulated a white population somewhat less than Australia accumulated in the same length of time; and if the growths of the two countries are plotted on the same chart, the parallelism of the growth is very remarkable and the difference slightly in favor of Australia, in spite of the latter's disabilities in the matter of distance and relative lack of fundamental mineral wealth.

"For the defense, of Australia," says Engineer Mark, "we have to transport not only our men but supplies and foodstuffs because the small population cannot provide for much more than itself." Is Mr. Mark really sure about the foodstuffs? In a normal year, that is, in peace time, Australia is a great exporter of foodstuffs, and to all intents and purposes, does not import any. The exports, for instance in the last year before the war (1938-1939), included about sixty million dollars worth of wheat and flour, some fifty million dollars worth of meat, some seventy million dollars worth of dairy produce, and a considerable amount of miscellaneous foods.

There is no obvious reason why the agricultural produce of Australia which was increasing rapidly each year from 1934 to 1938, should have declined since 1938 to a point where it cannot feed a relatively modest American Army. I feel sure that it is nonsense to say that the small population cannot provide foodstuffs for more than itself. It has been providing vastly more than this for generations.

Engineer Mark also laments, "New Zealand, another immense territory, contains two and a half million" (people). This "immense territory" is about the size of Great Britain, or about twice the size of Pennsylvania. Considering that New Zealand was first settled by the whites about one hundred years ago, the country may be said to be one hundred years old. A population of two and a half million would beb an extraordinarily good showing. However, I doubt very much whether Engineer Mark has checked his figures, for the population of New Zealand is only about one and a half million, not two and a half. This is a much healthier rate of growth and a very creditable one considering the small size and the geographical remoteness of the country, and its poverty of mineral wealth.

Engineer Mark uses these illustrations, inaptly chosen, to support a contention that "Nations which could support great populations have set up needless barriers and thus retarded their growth and hindered the happiness of millions." "Immigration quotas, land policies, economic preferences or racial exclusiveness, or a combination of those evils have resulted in small populations." And besides Australia and New Zealand, he cites Canada as an instance of this contention.

It would, in the writer's opinion, be easy to show that nothing of the sort has been going on, and that the populations of these countries are as large as can be expected in view of their 'age', and their geographical distance from sources of immigration, and the limitations of their natural resources. Further, it is easy to show that Canada, with its limited population, is vastly more advanced industrially and far better able to support its own defense, or to assist in the general defense of the United Nations, than many another country of much greater population. At the present time, in fact, it is supplying even to the United States a great deal of intricate technical equipment for the defense of North America which the much more populous United States had not (up to two months ago at

(Continued on page 23)

ENGINEERS IN NAVY DEPARTMENT

PRESIDENT HOLBROOK APPEALS TO SECY. KNOX

REQUESTS INVITATION TO OCTOBER CONFERENCE

CALLED TO DISCUSS COLLABORATION

Between Labor and Industry

In an effort to promote efficiency and aid in winning the war, high ranking officials of the Navy, headed by Secretary Frank Knox, have scheduled an important conference to be held on October 1st. Legislative Chairman Saks of the National Society of Professional Engineers, in bringing the matter to the attention of President Holbrook, inspired the following correspondence which, together with the meeting announcement preceding the same, is self-explanatory.

ELMER A. HOLBROOK
President,
National Society of Professional Engineers

LABOR RELATIONS IN THE UNITED STATES NAVY

THE United States Navy is the largest single employer of labor in this country, if not in the world. The Navy is an integral part of the United States Government. It is the Navy of the farmer, the business man, the banker, and it is the Navy of labor of all types and categories; in short, it is the Navy of all of the people of the United States. As such, all men and women working for the Navy are working for and serving, particularly in war-time, one of the most vital and necessary institutions of their own government, and their own country—a fighting unit organized and now being developed to the maximum degree solely for the purpose of protecting and safeguarding not only the homes, families, and property of all of the people, including all those working for the Navy but, also, fighting for the preservation of all the principles, rights, and privileges now enjoyed by all the people of this country, again including labor which supports the huge program of the Navy.

This reasoning brings us to the conclusion that the aims, ambitions, plans, and hopes of the Navy are identical with those of the vast majority of the men and women who work for the Navy, and that the Navy and its employees are engaged and joined in a common cause and a common objective which can be achieved to the fullest degree only by wholehearted cooperation between those responsible for the operation of the Navy in all stages of management, and those who labor to produce the ships, guns, planes, and ammunition so vital to its program.

We are convinced beyond any doubt that the great majority of workers in our Navy Yards, Ordnance Plants, and other industrial shore establishments of the Navy, are just as interested in production and in progress in all directions towards winning this war, as are those of us in charge of the operations of the Navy in Washington, or on the high seas.

We feel that there should be no misunderstanding, no controversies, and no inequities which cannot be solved by management and production workers of the Navy working closely and harmoniously together to help win this war.

It is apparent that we have not yet attained that measure of cooperation which is possible and vital in this all out war, and we in the management end of the Navy admit our share of the responsibility for this lack of unity and express our determination with the cooperation of labor to rectify this situation in every way possible.

We expect all representatives of Navy management to meet at all times representatives of labor on an all out basis of openmindedness, friendship, tolerance, and mutual good will. We believe such a working policy carried on by all concerned will further enhance the morale of our Naval Establishments and we call upon all in authority, in all levels of management, and upon labor spokesmen, and labor itself, to adapt its thinking, its actions, and its sentiments, to the end that the utmost cooperation may exist in all of the relationships within the Navy family; all of whom should be engaged now in helping to make the Navy the most effective and powerful weapon possible for the service of our country in this, the most difficult hour of its history.

In furtherance of this program, the Secretary of the Navy, Frank Knox, and the Commander in Chief United States Fleet, Admiral Ernest J. King, will invite representatives of labor from each of the Navy Yards, and other industrial Shore Establishments, to meet with them and other ranking officers of the Navy in Washington for a conference on October 1, 1942, at which ways and means of further implementing this program of cooperation will be discussed. It is expected that approximately 250 such representatives, to be selected by labor as hereafter to be determined, will be invited to attend this meeting. It is

also planned to hold such a meeting at approximately four-month intervals throughout the period of the war.

There is no propaganda idea about this program and no buncombe of any nature. The Navy family must be welded together as never before in order to meet this terrific war menace the extent of which our people now must realize and prepare to meet with all the strength, courage and sacrifice we possess if we are to win out.

This program does not mean higher wages, shorter hours of work, or less discipline; it means closer cooperation, more understanding of each other's problems, more friendliness in our relationships, and undoubtedly greater sacrifice on the part of all of us. This is a sincere attempt to bring together in a harmonious unit all men and women of the Navy family for the sole purpose of winning this war and achieving victory for our country and our common cause.

(Signed) Ernest J. King
Admiral Ernest J. King, Commander in Chief, United States Fleet.
(Signed) F. J. Horne
Vice Admiral F. J. Horne, Vice Chief of Naval Operations.
(Signed) S. M. Robinson
Vice Admiral S. M. Robinson, Chief of the Office of Procurement and Material
(Signed) C. W. Fisher
Rear Admiral C. W. Fisher, Director of Shore Establishments Division.
(Signed) Frank Knox
Frank Knox, Secretary of the Navy.
(Signed) James Forrestal
James V. Forrestal, Under Secretary of the Navy, Procurement.
(Signed) Ralph A. Bard
Ralph A. Bard, Assistant Secretary of the Navy, Labor Relations.
(Signed) Artemus L. Gates
Artemus L. Gates, Assistant Secretary of the Navy for Air.

August 27, 1942

THE HONORABLE FRANK KNOX
Secretary of the Navy
Washington, D. C.

Dear Mr. Secretary:

On August 6, 1942, you issued a notice titled "Labor Relations in the United States Navy." In this you called a meeting of representatives of Labor to meet with ranking officers of the Navy in Washington on October 1, 1942, for the purpose of "implementing this program of cooperation."

As president of the National Society of Professional Engineers, I respectfully call to your attention the interest of the professional engineers of our nation in the October conference. There are several thousands of professional engineers now in the employ of the Navy Department. They are professional brain workers necessary in design, in construction, and in supervision.

Great efforts are being made to organize labor unions among the professional engineers, especially with those engaged in design and inspection. We are not hostile to labor unions. However, it is the position of our Society that the professional engineer, licensed under the laws of forty-five of our states, should be neither a part of labor nor of the employer, but in an intermediate position, where his original and constructive thinking and judgment may have free play.

We ask that in your coming conference you consider with Labor and with officers of your department, the status and position of the professional civil, mechanical, electrical, metallurgical, aeronautical, and other engineers in your service. Our Society would be glad to be of any possible aid. I believe an open discussion of this problem will be of great value to the Navy Department and to your professional engineers.

Respectfully yours,
E. A. HOLBROOK
President, National Society of Professional Engineers
and Dean, Schools of Engineering and Mines
University of Pittsburgh

August 28, 1942

THE HONORABLE FRANK KNOX
Secretary of the Navy
Washington, D. C.

My dear Mr. Secretary:

There are several thousands of professional engineers employed by the Navy Department, especially in construction and inspection work. In their vital functions of design, supervision and inspection they must be independent and fearless in action and judgment. They indeed are representatives of the engineering profession of whom we are proud.

In my capacity as president of the National Society of Professional Engineers, I have received complaints from certain members of our Society employed by the Navy as follows:

> That they were employed on an annual salary basis by the Navy, which salary was based on a working week of forty hours, and that they were promised extra remuneration for extra work requiring extra time. They state that they have worked much extra time under orders, but that extra compensation has been refused them. They ask me if it is necessary for them to join a labor union in order to have a hearing on the important question.

Our Society is not opposed to the Labor Union movement. However, we believe that the professional engineer should not be a part either of labor or of employer, but should occupy an independent position between them. Only in this way can he freely use his vital knowledge in design, construction, and supervision of engineering work. We can see no good in a professional man joining a labor union in order to obtain a hearing on what seems to him an important question.

We respectfully ask that the proper officers of your department consider again the professional status of the independent professional engineer in civilian positions in your department.

The officers of our National Society will be honored to be of any possible assistance.

Respectfully yours,
E. A. HOLBROOK
President, National Society of Professional Engineers
and Dean, Schools of Engineering and Mines
University of Pittsburgh

(Continued on page 22)

INFORMATION PLEASE

A FEW QUESTIONS FOR ENGINEERS

INTENDED TO REFRESH THE MEMORY

EXHUMED FROM THE FILES

of

The American Engineer

As far back as the early part of 1931, *sometime before quiz sessions had assumed prominence as a means of radio entertainment and instruction, the Editor of the American Engineer, at a loss for material, posed the following series of refresher questions for engineers. Once again in the same predicament he dusts off the old filler hoping that the present interest in quizzes will justify repetition after a period of more than eleven years during which time this form of offering has risen in the esteem of the business and radio world.*

Give the name: of a noted Italian Arctic explorer; of the inventor of carborundum.

With what activity is each of the following names chiefly associated: Alexander Graham Bell, Sir Henry Bessemer, John, James and Daniel Bernoulli.

Mention an institution founded by Peter Cooper; by Ezra Cornell.

What change in astronomy is associated with the name of Copernicus?

What unique honor in science was won by Madame Curie?

State the chief contributions to science by Louis J. Mande Daguerre; by John Dalton; by Sir Humphrey Davy.

What recent inventions owe much to the activities of De Forest?

Who first propounded the atomic theory in ancient times?

What was Descartes's chief contribution to mathematics?

For what is each of the following people particularly noted: Thomas Edison, Alexander Eiffel, Albert Einstein?

Name the originator of the Fahrenheit scale on thermometers.

Who was the English chemist that first used the terms "anode" and "cathode."

What Persian poem did Fitzgerald popularize in the English-speaking world? (Just to relieve the tension).

What important scientific discovery was made by Benjamin Franklin?

What achievements justified the election of Robert Fulton to the American hall of fame?

Catalogue the contributions of Galileo to science and inventions.

Mention two conspicuous achievements of G. W. Goethals in addition to his construction of the Panama Canal.

What is the oldest engineering school in the United States (except West Point); in Europe?

What is invar, and who originated it?

What was De Lessep's greatest engineering triumph?

What was the occasion of Liebnitz's controversy with Newton?

Indicate the principal scientific achievements of Michelson; of Millikan.

What famous actress had a son highly distinguished as a bridge engineer?

Give an account of the steps by which Newton reached a verification of the law of gravitation.

Make a list of the contributions of Pupin to science and invention.

Who designed the New York subway?

Describe the chief ideas or principles with which Pythagoras' name is associated.

Who is reported to have discovered the aberration of light in 1725?

For what is Dr. Lister the famous British physician noted?

What name is identified with the law of the expansion of gases enunciated in 1787.

Who discovered the correction motions of fixed stars in 1718?

Who made the first successful incandescent lamp?

Name the discoverer of the antitoxin treatment for hydrophobia.

With what is the name Napier identified? When did he live?

Approximately when were Kepler's laws of motion published?

For what is Planck famous?

Who was the author of the famous "Principia"? When did he live?

When and where was coal first mined in America?

Who built the first dynamo capable of furnishing continuous current?

During what epoch did cotton manufacturing begin in the southern states?

Who first measured the charge of an electron?

In 1680 Van Leeuwenhoek made a notable discovery. What was it?

The first cast iron bridge in America was built in 1840. Can you tell where?

What discovery anent metals came from Lavoisier in 1782?

Where and when was the first real skyscraper built?

What is the velocity of light and who first determined it?

RECENT EXAMINATIONS

REQUIRED OF CANDIDATES FOR ADMISSION

TO THE PRACTICE OF PROFESSIONAL ENGINEERING

(Sample from State where all must take tests)

In the hope of focusing the attention of recent and prospective graduates from engineering schools, as well as others, who aspire to the designations P.E. and L.S. and the right to practice Professional Engineering and Land Surveying, on the requirements therefor, the American Engineer devotes a considerable portion of this issue to the publication of the questions which confronted those scheduled for the 1942 June examinations in a State where all candidates must qualify through written examination.

PROFESSIONAL ENGINEERING — PART I

Friday, June 26, 1942—9 a. m. to 1 p. m., only

Answer eight of the following twelve questions, including at least one question from group I. If more than eight questions are answered, only the first eight will be considered. Throughout these examinations slide rule and books designed for general reference and office use may be used. Books of questions and answers may not be used. Return these questions with your answer papers.

Group I

1. A village wishes to build a town hall consisting of a ground floor and basement. The following facilities are to be provided: an auditorium to seat 500 people; a stage to accommodate 50 people; check room; public toilets in basement; a meeting room for 15 aldermen, with anteroom and private toilet; two committee meeting rooms; office for village clerk, with public space; public phone booths; lobby; halls as required. Sketch a plan of the ground floor, giving general dimensions.

2. What factors govern the size and number of elevators in a buliding?

Group II

3. A beam, 30 feet long, carries a uniform load of 1500 lb per lin. ft on the left third, a uniform load of 1000 lb per lin. ft on the middle third and a uniform load of 500 lb per lin. ft on the right third of the length. The beam rests on two supports, 25 feet apart. The right support is under the right end of the beam. The left support is five feet from the left end of the beam. Calculate the reactions, draw the shear diagram and determine the location and amount of the maximum bending moment.

4. Specifications require an allowance of one inch per 100 feet for expansion of outdoor steel structures. Give figures and computations to justify this rule.

5. Compute the resisting moment in ft-lb of a riveted plate girder section consisting of a web 48 × ⅜, four angles 6 × 4 × ⅝ and two cover plates 14 × ½ at an extreme fiber stress of 18,000 lb per sq. in. Assume ⅞-inch rivets.

6. If the girder of the previous problem is subject to a shear of 100,000 lb, what is the maximum permissible spacing of the rivets through the vertical legs of the angles?

7. Describe briefly the methods of placing a cast-in-place concrete pile and a pre-cast concrete pile. Under what conditions is *each* type used?

8. Assuming an appropriate column formula, choose a rolled I-beam section to act as a column 12 feet long under a load of 150,000 lb.

9. Assuming an appropriate formula and unit stresses, choose a section for a reinforced concrete column to carry a load of 150,000 lb.

10. A reinforced concrete wall is 15 feet high and one foot thick. It stands on the center of a continuous footing four feet wide and one foot thick. What is the factor of safety against overturning under a wind pressure of 30 lb per sq. ft.? What is the maximum pressure under the footing for the combined load?

11. Choose a section for a concrete beam, reinforced for tension only, to resist a bending moment of 500,000 in-lb.

12. The shell of a boiler is $\frac{5}{16}$-inch thick and is spliced by a lap joint with three rows of ¾-inch rivets. The outer rows have a pitch of four inches, the center row has a pitch of two inches. If the allowable unit stresses are 16,000 lb per sq. in. in tension, 12,000 lb per sq. in. in shear and 24,000 lb per sq. in. in bearing, in which detail is the joint weakest and what is the efficiency of the joint?

PROFESSIONAL ENGINEERING — PART II

Friday, June 26, 1942—2 to 6 p. m., only

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered.

1. A sewer is constructed of vitrified clay tile pipe, 36 inches in diameter, and is a half mile long. The elevation of the invert of the pipe at the upper end is 13.46 ft and at the lower end is 11.22 ft. How much sewage in mgd is flowing through the pipe if it flows half-full?

2. Across the end of a steel tank 3 ft wide and 3 ft deep is fastened a brass plate in which a sharp-edged rectangular notch is cut along the top edge 6 in. deep and 20 in. wide. If the tank is filled with water and its level is maintained just to the top, how much water would discharge through the notch?

3. An impulse wheel is 13 ft in diameter and develops 15,000 hp when operating under a head of 1008 ft at a speed of 171 rpm and when the rate at which water is supplied to it is 155 cfs. Determine the resulting efficiency, the speed ratio and the specific speed.

4. A 6-inch cast iron pipe in good condition delivers water (temperature 75° F.) from one tank to another. The pipe makes a sharp-edged connection to each tank, has four short-radius 90° elbows and is 50 ft long. If the pipe is to carry 3 cfs, what is the required difference of elevation of the water levels in the two tanks?

5. A Terry steam turbine has six nozzles with $\frac{5}{16}$-in. throats. Steam is supplied at 135 psia and 550° F. and is exhausted at 25 psia. The nozzle velocity coefficient is 0.95.

a Assuming 20 per cent of the kinetic energy in the jet to be converted into bhp, calculate the bhp delivered.

b Calculate the Rankine efficiency.

6. Calculate the power required to compress 5000 cu. ft of free air per hour initially at 14.5 psia and 70° F. to 100 psia, assuming (*a*) isothermal compression, (*b*) adiabatic compression.

7. State *nine* factors that control the efficiency of a steam boiler, including the furnace and the combustion therein.

8. *a* Explain how an increase in compression ratio increases the fuel economy of a gasoline engine.

b What is the effect of increasing the compression ratio on the exhaust temperature in a gasoline engine?

c Why does the exhaust temperature in a gasoline engine increase as the throttle is opened, the air-fuel ratio being constant?

9. Two cranks, each six inches long, are connected by a drag link. The crank centers are 4 inches apart. The drag link connecting the free ends of the cranks is 7 inches long. Determine graphically the angular velocity ratio when one crank assumed as the driver has moved through 90 degrees from its vertical position.

10. A $1\frac{3}{16}$"-diameter steel shaft is supported on bearings 6 ft apart. A 24-inch pulley weighing 50 lb is attached at the center of the 6-ft span. The pulley runs 400 rpm and delivers 15 hp to the shaft. The shaft weighs 8.77 lb per ft. A belt pulls on the pulley with a force of 250 lb in a vertically downward direction. Calculate the maximum stress in the shaft due to the combination of bending and torsional stresses.

11. Calculate the power delivered by a motor driving a four-screw tensile testing machine from the following data: pitch diameter of screw 2.5 in., lead of screws 0.5 in., draw head moves 1 in. per min. when pulling 200,000 lb, coefficient of friction at screw threads 0.1, efficiency of reduction gear train driving screws 40 per cent.

12. *a* Sketch an Oldham shaft coupling and show that the angular velocity ratio of driving shaft to driven shaft is unity in all positions.

b Sketch a Hooke's joint or universal coupling and calculate the maximum and minimum angular velocity ratios when the driven shaft makes an angle of 10 degrees with the driving shaft.

c What are the necessary arrangements to produce an angular velocity ratio of unity between driving and driven shafts when using two universal couplings and an intermediate shaft?

13. A 15-hp, 220-volt, direct-current shunt motor draws an armature current of 60 amp at full load. The armature resistance, including brushes, is 0.26 ohm. Calculate the total resistance of a starting box which would permit this motor to develop a starting torque equal to twice that at full load.

14. Two shunt generators, each with a no-load rating of 125 volts, are operated in parallel. Both machines have external characteristics which are straight lines over their operating ranges. Machine No. 1 is rated at 250 kw and its full-load voltage is 118 volts. Machine No. 2 is rated at 200 kw at 114 volts. Calculate the operating voltage when the two machines supply a total current of 3400 amperes. How is the load divided between the two machines?

15. A source of electrical energy delivers 150 kw at 208 volts and a lagging power factor of 80 per cent to a 3-wire, 3-phase line. This line delivers power to a balanced load at some distance. If each line wire has a resistance of 0.01 ohm, calculate the difference of potential between line wires at the load.

16. A circuit taking 20 amp from 60-cycle, 120-volt mains operates at a lagging power factor of 80 per cent. Show how a condenser can be placed in the circuit to correct its power factor and calculate the size of condenser necessary to bring the power factor to 100 per cent.

PROFESSIONAL ENGINEERING — PART III

Saturday, June 27, 1942—9 a. m. to 1 p. m., only

Answer three questions, but no more, from group A, and five questions, but no more, from any one or two of the groups B, C, D, E. Do not select questions from more than two of groups B, C, D, E. If more than eight questions are answered, only the first eight, selected as indicated above, will be considered.

Group A—ENGINEERING ECONOMICS AND PRACTICE

1. Outline the method of solution in the determination of the most economical size of pipe line *from the standpoint of minimum total annual cost.* Is this method always best? Why?

2. A plant contains the following battery of boilers with efficiency characteristics as given

Boiler No.	*Manufacturers' rating, H.P.*	*% Rating*	*% Overall efficiency*
1	1000	80	70
2	1000	75	65
3	1500	50	45
4	1500	60	55
5	1500	100	70
6	1200	110	70
7	1200	100	65

What boilers should be operated to carry a load of 4800 boiler horsepower, if the coal used has a heating value of 12,000 Btu per lb? Show your calculations.

3. Should construction contracts prescribe any, or all of the following: (*a*) definite sequence of operation, (*b*) methods of performing work, (*c*) quality of finished product? Give reasons for your answer.

4. A distributing system of electric energy is supplied by a hydroelectric plant with large pondage for its installed capacity and a steam plant. The hydro-plant can supply about 30% of the total energy used annually.

a Taking into account all factors, state how the plants should be operated for economy.

b Would the operation be the same whether the transmission lines were long or short? Give reasons for your answer.

5. A pumping plant of 5000 gallons per minute capacity delivers water against a head of 150 feet with an efficiency of 70% at full load and 40% efficiency at half load. The plant cost $4000 installed. The power costs one cent per kwh, and fixed charges are 12% of first cost. The plant operates at full load for 3000 hours per year and at half-load for 2000 hours per year. Find the total annual cost of operation and also the cost per million gallons pumped.

Group B—CHEMICAL ENGINEERING

6. A certain company wishes to operate an internal combustion turbine. As a fuel, there is available a fuel oil analyzing 84% carbon and 16% hydrogen. This is fed at 65° F to a burner, and compressed air at 400° F is supplied to the burner. The products of combustion then pass into the turbine. It is found that the maximum allowable temperature in the turbine must not exceed 1500° F, because of the high stresses set up in the rapidly rotating parts. Assuming no heat losses, what percentage excess air must be supplied to the burner in order that the temperature in the turbine will not rise above 1500° F?

7. A 50% glycerol solution at 90° F. is being pumped through a 4-inch standard pipe at a velocity of 2 feet per second. It is found that the pressure drop due to friction between two points in the line is 10 pounds per square inch. If power costs 1.5 cents per kilowatt hour, what percentage savings in daily operating costs could be made by raising the temperature to 130° F, assuming that the velocity remains constant? The density of 50% glycerol at 90° F is 78.5 pounds per cubic foot and at 130° F is 75.0 pounds per cubic foot. The viscosity at 90° F is 4.3 centipoises and at 130° F is 2.1 centipoises.

8. A water heater, consisting of 2-inch standard pipe inside of 3-inch standard pipe, is being used to heat water from 50° F to 150° F. The water is flowing through the inner pipe at an average velocity of 1 foot per second, while steam at 212° F is used in the annular space, the value of the film coefficient for the condensing steam being 2000. It is planned to increase the capacity of the heater 50%, maintaining the same terminal conditions as at present, by increasing the length of the heater. What percentage increase in length will be necessary?

9. A hot solution of zinc sulfate contains 35% $ZnSO_4$. It is desired to obtain an 80% yield of $ZnSO_4.7H_2O$ crystals from this solution by evaporating some water and then cooling to 10° C. If the solubility of $ZnSO_4$ at 10° C is 2.952 molal, what weight of water must be evaporated from 1000 pounds of original solution in order to obtain the 80% yield of crystals?

10. *a* In the case of multiple-effect evaporators, explain how the optimum number of effects is chosen.
b Set up type computations and explain in detail exactly how the number of square feet of heating surface is determined in the case of a three-effect evaporation system operating on a solution with appreciable boiling-point rise.
c What factors limit the practical maximum vacuum that can be used in an evaporator?
d Describe *four* methods of feeding evaporators and state the advantages and disadvantages of each.

11. A plant engineer is confronted with the solution of a troublesome filtering problem involving a gelatinous, highly compressible precipitate.
a What type of filter is best adapted to handle it?
b What engineering information must be secured in order to enable him to specify the size of the filter, the thickness of the cake, the pressure to be used, and whether the process should be carried on at constant rate or constant pressure for the most economical operation?

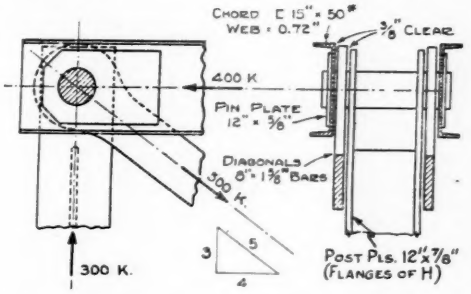
12. You are the safety engineer in a chemical manufacturing plant which processes and produces toxic and highly inflammable chemicals. Outline the safety rules and practices that you observe in your plant for the protection of life, health and property.

13. Phenol is being prepared from benzol in increasing quantities by several processes. Select *one* process and
a Give the chemical reactions involved.
b Draw the process flow sheet.
c Describe the various units involved in the synthesis.

Group C— CIVIL ENGINEERING

14. A horizontal chord member, a vertical post and an eyebar diagonal of a building truss meet on a pin as shown in the following sketch. Determine the pin diameter, allowing ⅜" between adjacent plates and bars and keeping the design within the following unit stresses. Give (*a*) the pin bearing stress, (*b*) the pin shearing stress.

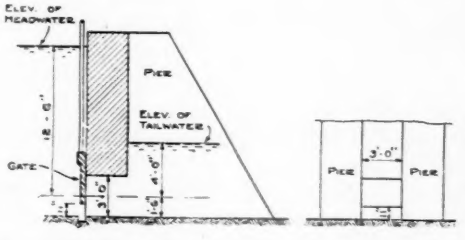
Bending	30,000 lb per sq in.
Bearing	32,000 lb per sq in.
Shearing	15,000 lb per sq in.



15. A pipe line for supplying water is 9 ft in diameter and is made of steel plate ½" thick. Circumferential joints are field-riveted lap joints using ⅞" rivets in a double row, spaced 3" center to center in each row. A section of this line, 85 ft long and extending between two pipe anchors, was installed without an expansion joint and the ends were fixed when the air temperature was 40° F. The maximum range in temperature to which the pipe is subjected is from 110° F to — 30° F as determined by the air temperatures in summer and in winter when the pipe is empty. Calculate the shearing stress to be carried by the rivets in the circumferential joints.

16. Explain briefly how the yield of a watershed for power or water supply purposes may be calculated and tell how the necessary storage capacity to provide a given rate of delivery may be calculated.

17. A sluiceway located in the wall of a canal and consisting of six openings, each 3'–0" × 3'–0", is equipped with a gate which may be partially or fully opened as illustrated. The upstream head measured on the center line of sluiceway is 12½ ft and the downstream head is 4 ft. What is the discharging capacity of the sluiceway (*a*) with each gate open 11", (*b*) with each gate wide open?



18. The coordinates of the corners of a parcel of land are as follows:

Station	X	Y
A	0.00	0.00
B	350.36	239.10
C	580.25	125.61
D	726.50	35.35
E	940.72	—125.13
F	1039.41	—335.22
G	1381.66	—476.86
H	704.76	—745.65

Compute the area of the property by the method of rectangular coordinates.

19. *a* Write a clause in a set of specifications for "earth excavation" and for "rock excavation" so that there will be a minimum of disputes between the engineer and the contractor as to the classification of materials for payment.

b A contract for the construction of a vitrified pipe sewer includes a general or "blanket" clause that the contractor shall "perform all work and supply all materials for the completion of the work as shown by the plans." In opening trench for this sewer, ground water is encountered. The contractor has considerable difficulty in laying the pipe and making the joints and appeals to the engineer for advice. The engineer suggests to the contractor that he would save expense by excavating the trench 6" deeper than would otherwise be necessary and by filling the trench bottom with 6" of cinders. Later the contractor claims an "extra" for this. If you were resident engineer, would you allow it? Give reasons.

20. The P. I. on the center line of a rural highway is at Station 57 plus 10 and $\Delta = 67$ degrees. A pavement 20 ft wide is to be constructed. The maximum radius that can be obtained is 290 ft, measured to the center line of the pavement at the P. C. and P. T. Design the curved section of the highway, showing curvature and superelevation. Show side slopes to be used on drainage ditches which are to be 2 ft deep. Assume that the topography is quite level.

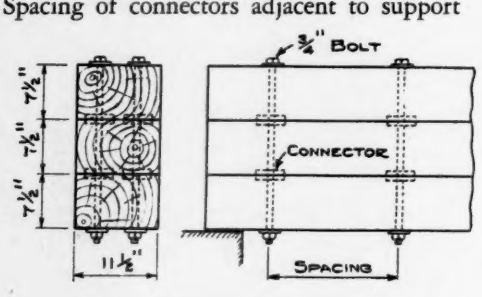
21. A built-up beam simply supported and composed of three 8" × 12" (7½" × 11½" finished size) Douglas fir timbers, as shown in the following sketch, is to be designed to carry a live load of 1200 lb per lineal ft on a 26-ft span. The timbers are to be joined together with 4" split ring connectors in pairs and ¾"-dia. bolts. Assume that the connector safe load is 11,000 lb per pair and that the allowable maximum horizontal shearing stress is 100 lb per sq in.

Find:

a Maximum horizontal shearing stress

b Horizontal shearing stress adjacent to support on plane of joints between timbers

c Spacing of connectors adjacent to support



Group D—ELECTRICAL ENGINEERING

22. A series motor has an armature and a series field of 0.30-ohm and 0.07-ohm resistance, respectively. When operating from 550-volt mains, the machine makes 355 rpm and draws 75 amp. What is the speed of this machine when the armature current is 25 amp? Assume the saturation curve of the motor to be linear over the operating range and its armature reaction to be negligible.

23. *a* A 4-pole, lap-wound motor with 360 armature conductors has a current rating of 250 amp. How many turns should be wound on each of the two interpoles in the frame of this machine?

b If the armature of this machine is changed to a 4-pole, wave-winding armature with the same voltage, speed and power rating as the first, will the original interpoles function satisfactorily? Give reasons for your answer.

24. *a* A 6-pole, 60-cycle, 3-phase, wound-rotor induction motor delivers 25 hp at 1150 rpm. If the rotational losses of the rotor are 300 watts, calculate the power input to the rotor.

b If the rotor resistance measured between slip rings is 0.12 ohm, calculate the rotor current per slip ring when the output is 25 hp.

25. A 2200/220-volt, 100-kva transformer is to be tested for efficiency. While adequate power is at hand, there are no loading facilities available. Explain what measurements you would make and show how the readings taken may be used to determine the efficiency of this transformer at full load with a lagging power factor of 80 per cent.

26. The following results were obtained from a test on a 20-kva, 2300/230-volt transformer: Low-voltage winding short-circuited; rated current of 8.7 amp. was maintained in high-voltage winding when 105 volts were applied. The power input under above conditions was 263 watts. Find the voltage regulation at 75 per cent power factor leading.

27. An engineer is called upon to start a plant for the first time and make a report on an acceptance test. The plant consists of 3 units, as follows: a 125-kva, 440-volt unit, a 325-kva, 2300-volt unit, and a 400-kva, 2300-volt unit, together with two compound-wound exciters, either one capable of furnishing excitation for all three generators. Outline in detail the steps taken in starting up and synchronizing the units. Show by a schematic diagram the connections and all instruments, synchronizing lamps, relays and switches necessary. Outline in detail the steps in making the acceptance test. The machines have a guarantee of 150 per cent load for 1 hour not to exceed 550° C rise and each generator is guaranteed to have a 6 per cent voltage regulation.

28. A copper- copper oxide, bridge-connected contact rectifier consists of four ideal sections. The forward resistance of each section is 3.33 ohms, and the permissible peak current per section is 10 amp. If the rectifier is used to charge a 6.6-volt battery, what peak value of the applied alternating emf will yield the limiting current of 10 amp? What will be the average charging current?

29. A 30-ohm load is to be matched to a 500-ohm transmission line operating at 50 megacycles. Design a network of lumped constants to match this load and line for maximum power transfer. Give the circuit of the network and determine the magnitude of each element involved.

Group E—MECHANICAL ENGINEERING

30. A plant has been using in a process 21,000 lb per hr of steam at a pressure of 5 psi gage. This has been obtained by using all of the exhaust from a 1000-kw turbine operating at full load. The turbine throttle conditions have ben 400 psi gage and 600° F total temperature. The generator efficiency is 95%. Changes to the process now require raising the exhaust pressure to obtain the same quantity of steam at 240° F dry and saturated. How much must the turbine throttle temperature be raised in order that the same quantity of steam passing through the turbine and exhausting at the higher temperature will generate full load? Assume the same turbine efficiency.

31. *a* Two batteries of process coolers are supplied with cooling water from a common header. Each battery discharges this cooling water into its respective sump. The two sumps are 100 ft apart, at the same elevation and of unequal size. Each sump supplies a single-stage centrifugal pump. Discharge of each pump is piped to the common header supplying the cooling units. All or any portion of these units may be in operation at one time. In practice, difficulty was experienced due to the fact that one or the other of the sumps would run dry. Construction limitations of the building prevented installation of a leveling line between the two sumps. In view of this handicap, what changes can you suggest that will correct the difficulty mentioned? Illustrate problem and solution by means of a sketch.

b A cooling system has a capacity flow of 400 gpm when water pressure in the main with which it connects is 80 psi. However, under maximum demand, the pressure in the main drops to 50 psi. What capacity and type of booster pump and motor would you select to maintain capacity flow when pressure in the main drops to 50 psi? Neglect the effect of the booster pump upon the water condition in the main.

32. In order to reduce frequency of roll changes and increase machine running time and output, it is proposed to redesign a machine that processes material in strip form. It is proposed to double the diameter of the rolls of material supplied to and taken away from the machine in order to accomplish this purpose. What changes would you make, if any, to the roll supporting shafts, their driving mechanism, brakes, or such other parts as you visualize as being necessary to this machine? Why? Indicate the engineering principles involved and their application to this problem.

33. Define and describe the following methods of heat treatment. List the effect of *each* on ductility, modulus of elasticity, tensile strength, elastic limit and internal stresses when applied to high-carbon steel: (*a*) full annealing, (*b*) normalizing, (*c*) stress relief annealing, (*d*) hardening, (*e*) tempering.

34. *a* A unit air conditioner is to deliver 10,000 cfm of air at 64° F dry bulb and 35% relative humidity. On a dry-air basis, 75% of the air is recirculated, returning to the conditioning unit at 75° F dry bulb and 58° F wet bulb. Twenty-five per cent is fresh outside air at maximum temperatures of 95° F dry bulb and 80° F wet bulb.

All of the air is to be passed through the spray chamber section of the conditioner. The average relative humidity of the air leaving the spray section will be 90%. What is the refrigeration load of the conditioning unit?

b It is proposed to use 10° F brine as the refrigerant for the above conditioner, the cooling surface being a finned coil located inside the water spray chamber. What objectionable operating characteristic will probably develop at the higher loads and how can it be overcome?

35. Suppose, as manager of a plant, you manufacture printing presses. These are made on a job-order basis. You employ about 200 men, are well equipped, and have been long established. The product is well and favorably known.

Because of the war, you go on a 100% offense basis and take a contract for 100,000 intricate war units for the manufacture of which you can convert your shop.

Outline briefly, in chronological order, the steps you would take to convert and expand your organization and plant for the new contract.

36. A plant has been burning fuel oil under three 25,000-lb-per-hr boilers operating at 200 psi and 500° F. Because of war conditions, fuel oil is no longer obtainable and changes in equipment must be made so as to burn coal.

a What will be the difference in operating cost at a steam load of 40,000 lb per hr, assuming 220° F feed water, if the cost of oil is 4 cents per gallon containing 150,000 Btu, and coal is $6.25 per ton having 14,000 Btu per pound. Efficiency with oil is 80% and with coal 75%.

b Discuss the selection of coal-burning equipment, new auxiliary equipment necessary, changes to existing equipment, etc.

37. *a* Compute the horsepower and torque delivered to the wheels, when operating in high gear, by a 6-cylinder automobile engine with 3½" bore and 4" stroke at 3600 rpm. Assume reasonable values for mep, compression, mechanical efficiencies and rear axle gear ratio.

b What factors affect torque delivered by the engine? Would you expect the engine speeds for maximum torque and maximum power to coincide? Explain.

c Itemize and list *all* power losses to rear wheels.

EXAMINATION FOR LAND SURVEYORS

MATHEMATICS

Friday, June 26, 1942—9 a. m. to 1 p. m., only

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered.

1. The circumference of the fore wheel of a carriage is less by 4 feet than that of the hind wheel. In traveling 1200 feet, the fore wheel makes 25 more revolutions than the hind wheel. Find the circumference of *each* wheel.

2. Describe the relative position of two circles if the line of centers is (*a*) greater than the sum of the radii, (*b*) equal to the sum of the radii, (*c*) equal to the dif-

ference of the radii, (d) less than the difference of the radii. Illustrate *each* case by a figure.

3. Prove $\tan \frac{x}{2} = \frac{\sin x}{1 + \cos x}$

4. Find the vertices of the triangle whose sides are the lines $2x + 9y + 17 = 0$, $y = 7x - 38$ and $2y - x = 2$

5. The spheric triangle having as vertices the zenith, the pole and any star is often called the astronomical triangle. Use a sketch and show the meaning of its parts in terms of nautical astronomy.

6. A debt can be discharged in a year by paying \$1 the first week, \$3 the second week, \$5 the third week and so on. Find the last payment and also the amount of the debt.

7. The radius of the base of a right circular cone is 8 feet and the altitude is 10 feet. Find the area of the lateral surface, the area of the total surface and the volume.

8. From the foot of a hill in a plane, the angle of elevation of the top of the hill is 21°–07′. After going directly away 211 feet farther, the angle of elevation is 18°–37′. Find the height of the hill.

9. What is the equation of the circle having for its center the point (5, 3) and touching the line $3x + 2y - 10 = 0$? Give the equation in typical form without reduction.

10. Expand $(a + x)^{2/3}$ to *six* terms.

11. The radius of a circle is 5 feet. Through a point 3 feet from the center, a diameter is drawn and also a chord perpendicular to the diameter. Find the length of this chord and the distance from one end of the chord to the ends of the diameter.

12. Find an angle not greater than 90° which satisfies the equation $\tan y + \cot y - 2 = 0$.

LAND SURVEYING

Friday, June 26, 1942—2 to 6 p. m., only

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered.

1. The perimeter of a parcel of land measures 41,460 feet. The errors in closure are 11 feet in latitude and 9 feet in departure. Determine the correction in latitude and in departure to be made to a course in the survey 3200 feet in length, if no special difficulty was found in taking a particular bearing or in measuring a particular line.

2. In making a resurvey, it is found that several of the marks and monuments in the field do not agree with the description and location as set forth in the deed which made the last conveyance of the property. State what investigation should be made and explain fully under what circumstances each would hold.

3. A + 3% grade on a highway center line meets a — 5% grade at Sta. 160, the elevation of the grade at the intersection being 457.4. If a vertical curve 400 feet long is inserted, what is the grade elevation at the P. C. and P. T. and also at each station and half station on the vertical curve?

4. George S. Niles owns a piece of property in the Town of Green, Tuscarora County, New York, which he acquired from John C. Yost by deed dated August 16, 1916, recorded in the County Clerk's Office in Book 57 of Deeds at page 216. A survey made in 1865 shows the bearings and lengths of the boundary lines as follows:

Magnetic bearing	*Length in feet*
N. 58° E.	2508
S. 6° E.	2640
S. 17° W.	2640
W.	2640
N. 42°–35′ W.	1993.2

Take the area as 219.6 acres, more or less. Write a description of the property for conveyancing, assuming appropriate cultural or natural features for corners. Also include an identification of the property other than that of boundary-line description.

5. Moses Cole owned a parcel of land in the shape of a right triangle, one leg being 1848 feet in length and the other leg, 2970 feet. To each of his four daughters, he willed an equal portion of this land, all four parcels to have a common corner in the center of the hypotenuse of the original parcel. Make the division, using a sketch, and prove your work.

6–7. Find the area in acres of the following parcel:

Station	*Bearing*	*Distance in chains*
1	S. 75° E.	6.00
2	S. 15° E.	4.00
3	S. 75° W.	6.93
4	N. 45° E.	5.00
5	N. 45° W.	5.195

8. Define *seven* of the following: plus sight, height of instrument, datum, azimuth, stadia constant, ranging in, line of sight, contour interval, witness point, magnetic declination.

9. The area of a farm as determined by the use of a Gunter's chain, afterward found to be one link too short, was 150 acres. Find the true area.

10. Given the following latitudes and departures (in feet) of a survey:

Course	*N.*	*S.*	*E.*	*W.*
AB	842.0		659.6	
BC	427.3		706.7	
CD		1175.6	402.1	
DE		1252.4		963.9
EA	1158.7			804.5

The coordinates of New York State plane coordinate station "Corwin" are 400,000 E., 700,000 N. The course from "Corwin" to Corner "A" is Az. 167°-30′, 3000 feet. Calculate the coordinates of the corners of the parcel.

11. The magnetic bearings of the boundaries of a tract of land surveyed in 1842 are as follows: N. 73°–30′ W.; S. 16°-30′ W.; N. 28°-30′ W.; N 20° E.; S .43°-30′ E.; S. 13°–30′ E. The magnetic declination at this location was 4°-15′ E. in 1842, and 6°-45′ W. in 1942. What are the magnetic bearings of these boundaries in 1942?

12. *a* Discuss the status of a land surveyor in a court action involving a resurvey of a piece of property.

b Discuss the propriety of the designations "surveyor for the plaintiff" and "surveyor for the defendant."

Submitted as:

ITEMS OF GENERAL INTEREST

ANNUAL MEETING

N.S.P.E. to Hold Congress of Delegates

Hotel Claypool — Indianapolis, Ind.

Saturday, October 31st, 1942

As announced in the Report of the July 18th Directors Meeting which appeared in the July-August issue of the American Engineer, the Annual meeting of the National Society of Professional Engineers will consist of a congress of delegates only. The date for the meeting is October 31st and the site Indianapolis, Ind. The Claypool Hotel will be the scene of the Meeting.

Original plans laid a year ago called for a Convention Week during which the National Society of Professional Engineers, The National Council of State Boards of Engineering Examiners and the Indiana Society of Professional Engineers would convene and collaborate in professional and social programs and activities. In the months intervening since these plans were conceived the nation has been plunged into war and conventions of organizations of every kind are being curtailed or entirely dispensed with. In such times as these a real convention neither could nor should be attempted.

The National Council of State Boards of Engineering Examiners, as noted elsewhere in this issue, has cancelled its plans and will not meet at all. The Indiana Society of Professional Engineers has greatly curtailed its program and could not sponsor a Convention under the circumstances. The National Society has likewise made its decision to curtail the annual program. As a result of the above noted conditions, the 1942 meeting of N.S.P.E. which will take place coincidentally with a business meeting of the Indiana Society of Professional Engineers and the Indiana Council of Engineers will consist of the following:

9:00 A.M.—Meeting of the Board of Directors. (This to be an open session, to which all attendants at the meeting would be invited.)

12:00 Noon—Recess.

12:15 P.M.—Luncheon. (One speaker to be furnished for this session by N.S.P.E.)

2:00 P.M.—Meeting of the delegates of the N.S.P.E. to clear the business of the 8th Annual Meeting. (This to be an open meeting.)

4:30 P.M.—Recess.

6:30 P.M.—Annual Dinner. At the dinner the messages would be delivered by the President of the Indiana Council of Engineers, President of the Indiana Society of Professional Engineers, and the President of the National Society of Professional Engineers. The main address to be delivered by a speaker to be furnished by the N.S.P.E.

The Toastmaster for this occasion (the dinner) will be designated by the Convention Committee.

Every member State Society is expected to send its allocated voting representation to this Annual Meeting. Where less than the authorized number of representatives attend, those participating should be instructed to cast the full State vote.

All sessions will be open to members who may be able and wish to attend.

PUERTO RICO ORGANIZES ANOTHER MEMBER STATE ORGANIZES

ENTERS FOLD OF N.S.P.E.

Despite the rigors and obstacles presented by war, the National Society of Professional Engineers has been honored and strengthened by the formation of another associated Society of Professional Engineers in Puerto Rico.

This is a most worthwhile addition to the confederation known as N.S.P.E. and the National organization welcomes its newest state member.

Professor C. Calor Mota of the University of Puerto Rico has labored long and effectively to establish the professional movement in his home state and his colleagues in the rest of the U S. A. express appreciation and congratulations.

GOVERNMENT OF PUERTO RICO
UNIVERSITY OF PUERTO RICO
COLLEGE OF AGRICULTURE AND MECHANIC ARTS
MAYAGUEZ, P. R.
Department of Civil Engineering

Mr. Edward Larson, N.S.P.E.,
Executive Secretary,
National Press Building,
Washington, D. C.

Dear Mr. Larson:

I am very glad to inform you that in August 19, and to my initiative, a chapter in Puerto Rico of the National Society of Professional Engineers was organized in San Juan. The organization meeting was held at the office of the Superintendent of Public Works of Puerto Rico. There were eighteen distinguished engineers present in the meeting.

The following Board of Directors was appointed:

President (Presidente) ..... Engr. C. Calor Mota
Vice-President (Vice-Presidente) ..... Engr. Emilio Serra
Treasurer (Tesorero) ..... Engr. Ignacio M. Saavedra
Executive Secretary (Secretario Ejecutivo) Engr. Angel Silva

Representing the seven districts of Puerto Rico:

DISTRICT	REPRESENTATIVE
Arecibo	José D. Reyna
Aguadilla	Frank Ramírez
Guayama	Carlos M. Passalacqua
Humacao	Pedro A. Nieves
Mayaguez	William Márquez
Ponce	Rodulfo del Valle
San Juan	Cecilio Delgado

Further information in regard to the chapter will be sent to you by the secretary.

Kindly inform me what is the quota per member of this Chapter to the National Society of Professional Engineers. Any other information will be appreciated.

With my best wishes for your health and success,

Yours sincerely,
C. Calor Mota
Professor of Civil Engineering

NATIONAL COUNCIL S.B.E.E.

Annual Meeting Postponed

With Notes from *The Registration Bulletin*

The National Council of State Boards of Engineering Examiners has decided to cancel its 1942 *Annual Meeting. President Knipmeyer has sent the following message to the membership of the Council:*

"By a vote of 29 to 9 our Member Boards have decided that the Annual Meeting of the Council be not held this year, and

all voted that, in case of postponement, the term of office of the President, Vice-President, Past President and two Directors be extended.

"The decision to postpone the Annual Meeting was made principally because of travel curtailment earnestly advised by the Government and the feeling that this fall, when the meeting would be held, this curtailment might be even more desirable. Also many Board members will be so deeply immersed in war responsibilities that attendance might be impossible and a quorum at the meeting doubtful.

"It is to be recognized that postponement of our meeting need not lessen normal progress in registration matters. Our committees will remain intact and their activities proceed effectively. Their progress reports can be sent to our Executive Secretary at times agreed upon and published in the Registration Bulletin. Current questions can be handled by correspondence and, where desirable, presented in the Bulletin. Our Secretary, though very busy in these strenuous times, will welcome correspondence on all pertinent subjects and can be counted on to handle it efficiently.

"Patriotism and good citizenship are born of the same spirit. Instead of allowing our war activities to be an excuse for neglecting our Council work, which we all recognize as part of our main opportunities to serve in the interests of public health, safety and welfare, we should apply ourselves all the more faithfully to registration problems. Certainly we realize that not only in these war days, but also as we emerge into times of peaceful reconstruction, the ideals of efficiency and ethics in engineering, which are the goals of registration, are to be sought with ever increasing zeal.

"Engineers are trained to think realistically, and realistic thinking must tell that our citizenship responsibilities, individually and as a group, are steadily growing in this war and will grow in the peace to come. Definitely it is up to us to carry on. Our group responsibilities are as real as our individual responsibilities. So we must each play his part in National Council. We owe it to the public and we owe it to our profession."

DETAILS AND COMMENTS

Vote on Postponement

"The Annual Meeting of the National Council of State Boards of Engineering Examiners has been postponed and will not be held this fall as scheduled, however it will be held on October 25-28, 1943 at Indianapolis. A questionnaire was sent to each Member Board of the National Council and 38 replies were received. The vote in favor of postponing the Annual Meeting was 29, with nine opposed. Only 19 Member Boards stated definitely that they would send a delegate if the meeting was held and the required quorum of representatives from not less than 20 states may not have been present.

Officers Continued

"The President, Vice-President, Past President, Director from Western Zone and Director from Southern Zone, whose terms of office ordinarily expire after the Annual Meeting, will continue in office for another year in accordance with the vote of the Member Boards.

Committees

"The personnel of all standing and special committees of the National Council will remain the same for another year except that the President will fill any vacancies caused by death or resignation. The chairman of each committee has been requested to submit a brief progress report for his committee and these reports will be published in the December issue of The Registration Bulletin.

Subjects To Be Considered

"In the questionnaire sent to Member Boards, they were requested to submit special subjects or problems that they wish considered and these subjects are being listed herewith with the idea that Member Boards, which are especially interested in or have had experience with certain problems, will send to the Secretary a brief article giving their views and suggestions. These articles will be published in the Registration Bulletin thereby providing a means of interchange of information, viewpoints, and experiences of Member Boards in connection with various problems of registration, available to every member and Secretary of State Boards. If the Member Boards will cooperate and assist with this plan, the omission of the Annual Meeting will be greatly offset, and interest in the activities of the National Council and the benefit derived therefrom will be continued during the emergency period.

* * * *

POST WAR PLANS
and
The Construction Industry

In a recent publication issued by The Producers' Council, Inc. of Washington, D.. C., discussions are offered on the Post War Planning effort by representatives of various industries. Of particular point are the following questions posed and briefly answered by representative men. Comments on the same follow:

Must Chaos and Ruin Follow the War?

What is being done—and what can be done to assure a brighter future for the building industry when the war clouds roll away? Here is a comprehensive analysis of the background of this gigantic problem. It is also a challenging call to practical postwar planning. It sounds a note of cheer and progress in these troubled times and lays down the general procedure for carrying on an integrated program of industry-planning. It is the "keynote of the campaign," by a man with vision to see future possibilities as well as experience to understand past and present realities.

Can Business Develop a Program?

What is the opportunity and obligation of business to develop a program which will take the place of war production when Victory is won? This subject is explored in a very constructive manner by a Government economist who not only is well qualified by background and experience but is in a key position to correlate the postwar planning of industry, commerce and government. He points out both the favorable and unfavorable factors that are being developed during this war and suggests some solutions for the problem to be faced at the end of the war. He concludes with a summary of possible measures for assuring the maintenance of a high level of business activity and stresses the immense importance of construction in such a program.

Can Building Promote Postwar Prosperity?

Can the construction industry make a major contribution to the maintenance of full employment at high income levels at the conclusion of the war?

This basic question is broken down its component parts and carefully analyzed by a man whose past experience and present position eminently fit him to deal with the economic influences in the market for construction materials. his paper makes a series of very interesting assumptions about possible conditions in the construction field a few years hence and on those assumptions calculates the effective demand for dwelling units in various price brackets. The potential indicated market is tremendous but the problems in assuring this market are also formidable.

What is Your Company Doing?

While relatively few companies have the volume or scope of operations which permit or justify such a study of postwar business as is now being conducted by the General Electric Co., the thinking which prompted this company's planning can be applied by an organization, large or small. It is presented not solely as a pattern for detailed procedure but even more important as an inspiration for others to recognize the responsibility for doing something.

Perhaps the reader has something to add to this skeletonized symposium. If so address either the American Engineer or the Producers' Council, Inc., Washington, D. C.

RAISON D'ETRE

To use all Mother Earth's wise wrinkles well
To modify her sons' impris'ning shell
Of arm's-length scope, to nurture mortal's cell
'Til Nature's God is known—The Engineer.

To delegate to purposeful employ
Her sighs and tears and make of ev'ry boy
A bit of God to fashion and alloy
The world of all—aspires The Engineer.

To cause to function, all in plan designed,
Despite the muddling struggles of man-kind,
All sinews of our three-part unaligned
Environment—So wills The Engineer.

George S. Murphy, N. Y. 1942

THE FIELD ENGINEER'S LAMENT

'Mid'st heat and dust and chiggers,
Sweat and grime and dirt,
We listen to "the theory boys"
And the "dream" of some technical squirt.
From clerks and draftsmen to architects
They swarm upon us like insects,
Some rare advice is handed out
To save our time and do without
The methods used since Adam's days
For planning jobs and field surveys.
They've substituted new gimcracks
For transits, levels and hub tacks
Now, only one more thing remains;
To discontinue the use of chains.
(And substitute sawdust for brains!!)
My forty years across the board
And in the field from morn 'till night
Were simply wasted, now it seems
Since learning of these newer schemes—
And when I've made my last "setup"
And hear the call from up-above
To come and walk the golden streets
Where all is peace and joy and love
I hope my pals will be the practical chaps
Who've designed and built real jobs—not maps,
And that the boys who theorize
Will not be with us in the skies
But will, with all their "sliderule stuff"
Be blown away in one great puff
And land together in peace to dwell
Just nine miles south of a place called Hell.

Engineer William B. Gallagher, Jr., 1942
Waynesboro, Virginia

THAT BOY YOU USED TO KNOW

The call came for fighters, for men who were willing to pay,
For men who would fight for Democracy in the true American way.
And Johnny Green, the grocery boy, is now Lieutenant Green,
While Tommy Jones from Yourtown is flying with the Marines.
Our little Billy, the newsboy, is a gunner's mate no less,
And smiling Sam, the bootblack is a Sergeant in the mess.
All the boys from the city, from every town and farm
Are giving their all to the service to keep us all from harm.
And never a boy has quibbled that the cost is much too high
For he gives to the cause of freedom and the measure is never shy.
Each gives for the love of giving, in blood, and sweat, and tears.
The bonds we buy can't repay them in half a hundred years.
But Johnny and Tommy and Sammy just know that the folks at home
Are going to give from their treasures till the treasures are down to the bone.

James J. Bowe, 1942
Pres. Society, District of Columbia

THE FORGOTTEN MAN

(Reprint—The Keystone Blast)

When the long day's work is over
And you go back into town,
You limp into a restaurant
And find a place to settle down.
You're dusty, hot and sweaty,
And tired as home-made sin,
And the waitress looks you over
Like the cat had dragged you in.
When the dressed-up lads and lassies
Curl their lips and sneer,
Then you know just what they're thinking—
You're a G---- D--- Engineer.

When the contract's going badly
And the Supe's been on a spree.
And there's not a bit of progress made
That anyone can see,
When a truck has knocked the stakes out,
And a foreman's just been fired,
And a wild-eyed drunken skinner's
Got his "Cat" completely mired,
When the equipment's all gone haywire
And the whole job's out of gear,
Who gets the blame for everything—
Sure, the G--- D--- Engineer.

Yet, when cyclones, floods and dust storms
Leave the nation in distress,
When the roads have gone to pieces,
And the country's in a mess,
When new bridges, dams and highways
Must be built to save the day,
And someone has to hit the rough
To map out "Right of way,"
When there's jobs in need of doing
That fill men's souls with fear,
Then the U. S. sends an S.O.S.
For some G--- D--- Engineers.

When you go home for the week-end (?)
And your wife is feeling blue,
And the kids have caught the measles
And the rent has fallen due,
The yard is rough and woolly
Like it never has been mowed,
And your desk is piled with statements,
For most of the check is owed,
Then the world looks dark and dismal
And one thing is awfully clear—
Life ain't no bed of roses
For the G--- D--- Engineer.

Gaylord's Engineers, ACID AND POWER.

TO A SOLDIER FROM HIS FATHER

(An echo of World War I)

No word that ever passed my lips,
In all the years my life has run,
So close my wearied spirit grips,
So deep my heart in anguish dips,
As that dear, simple word "My Son."
The burthen of the grandest song,
By poet weaver, ever spun
Bears not the note for which I long.
God, hast thou made this love too strong!
This love of him, my son, my son!
Buoyed by the Saviour's sacred scars,
While greens the earth, while flares the sun
Since souls can mount all mortal bars,
On field of France, or 'mong the stars
My soul shall follow thine, My son.

F.J.S.—1917

Fragments from

STATE & SOCIETY ACTIVITIES

INDIANA

Highways Choose Chief Engineer

From the Indiana Professional Engineer comes the news that Ray H. Bower, an active member of the Indiana Society of Professional Engineers was recently appointed Chief Engineer of the State Highway Commission.

"Engineer Bower was graduated from Purdue University in 1912 obtaining a B.S. in C.E. degree. He was then associated with the Santa Fe Railway, later became County Engineer of Tipton, then enlisted in the Army Engineer Corps in 1918. Following that he was employed by the Davis Construction Company (Roads and Bridges), became District Engineer at Seymour, State Highway Commission, in 1933, and appointed to Assistant Engineer in 1941."

Men In Service

The Indiana Professional Engineer announces the following moves from civilian to military life:

B. A. Poole, formerly Chief Engineer of the Bureau of Sanitary Engineering, Indiana State Board of Health, has been commissioned a captain in the U. S. Sanitary Corps, and is now stationed at Fort Harrison.

J. V. Smythe, formerly Engineer of Bridge Design, State Highway Commission of Indiana, has been commissioned a captain in the U. S. Army Force, and is stationed at Harrisburg, Pennsylvania, in Officers' Training School.

Ben H. Petty, professor of highway engineering at Purdue University, has been commissioned a captain in the U. S. Army Engineer Corps, and is stationed with R.O.T.C. at Purdue. He has been assigned to his regular work there for the present.

Denzil Doggett, formerly Chief Engineer of the Indiana State Conservation Department, has been commissioned a captain with the Army Air Forces, and is stationed at Scott Field, Belleville, Illinois.

R. C. Wagner, Office Engineer (Bridges), State Highway Commission, has been appointed lieutenant, junior grade, in the U. S. Navy, and is now located at Newport, Rhode Island.

NEW YORK

Examinations for Professional Engineers

At the June 1942 examinations in New York State, a total of 104 applicants took the written examinations for admission to practice Professional Engineering. Of this number, 53 passed, 34 were conditioned in one subject, and 17 failed. Of those conditioned in one subject, one failed in Part I (Structural Planning and Design), 17 failed in Part II (Basic Engineering Sciences), and 16 failed in Part III (Professional Engineering and Engineering Economics).

Annual Report of Board of Examiners

This report of the State Board of Examiners of Professional Engineers and Land Surveyors is for the fiscal year ended June 30, 1942. During the year the Board held 8 meetings and considered 763 applications for licenses, of which 92 were rejected, 330 held for written examinations, 64 held for further consideration and 277 recommended for licenses.

At the June 1941 examinations 166 candidates appeared and of these 105 passed, 45 were conditioned in one subject and 16 failed. At the January 1942 examinations 146 candidates appeared and of these 83 passed, 44 were conditioned in one subject and 19 failed.

During the year the Board considered 15 applications filed with the National Bureau of Engineering Registration for Certificates of Qualification. After verification of the registration of each applicant in this State all were recommended for National Bureau registration and certification.

As the result of conferences held during the year between representatives of the State Education Department and the Board of Engineering Examiners with representatives of various engineering societies, educational institutions and other interested groups, the Board has approved in principle a proposal to permit candidates who have been graduated from approved engineering schools or who have otherwise met the educational or specified alternative requirements to take preliminary written examinations in engineering fundamentals at any time subsequent to the fulfillment of such requirements, postponing final examination for admission to the practice of professional engineering to the completion of the required experience period. The details of the plan are now being studied and every effort will be made to put it in effect at the earliest practicable date.

The personnel of the Board as of June 30, 1942 is as follows:

David B. Steinman — Chairman
Virgil M. Palmer — Vice-Chairman
Roy G. Finch — Secretary
Norman R. Gibson
Erich Hausmann

OHIO

Maintains Summer Activity

The customary bulletin from the Ohio Society has appeared on time, thus indicating that the Society, while recessing in some respects, does not vacation during the summer months. Accompanying the bulletin is the also customary letter from President Kennedy who seemingly takes a business holiday for a vacation. Following are the letter and the Bulletin:

"Professional Unity

Fellow Engineers:

"Wide interest, displayed by increasing numbers, supports the premise that Professional Unity of Engineers is highly desirable. Subordination of the various branches as such and emphasis upon the all inclusive significant term "Professional Engineer" beckons as the acme of attainment.

"Professional Registration is the vehicle which first sets the Engineer apart. Desire for acquaintance and association with one's professional fellows should follow as a natural sequence.

"Organization into groups which embrace people of similar ideals and interests is not new. The trend of the times indicates clearly, however, that progress and accomplishment can be achieved much more quickly by this means than by any other.

"Progress of the Professional Engineering movement is handicapped because the National Society of Professional Engineers includes as members only a fraction of those eligible. Enthusiastic participation in this movement cannot help but produce far reaching results. A unified profession, overlooking the narrow

and petty and dedicated to the promotion and protection of the Profession of Engineering as a social and econmic influence vital to the affairs of men and the community, is an objective worthy of attracting support from the best. Professional unity is a goal we should all be willing to strive actively for.

"Today the Engineer occupies a position of greater prominence and responsibility than ever before. With these have also emerged many professional problems which are crying for attention. Individual solution of many of them is difficult of attainment. Broad consideration and a unified approach offers the best chance of success."

SUMMER BULLETIN

The Engineer in Civilian Defense

The U. S. Office of Civilian Defense, through State and local Councils of Defense, is charged with the responsibility of organizing civilians for the protection of our people from enemy action. This charge is being accepted by Local Councils of Defense in the training of volunteer workers in all the fields of protection that are necessary to assure us that, in the event of enemy action on the home front, no unnecessary loss of life or damage to property will occur because of unpreparedness. These volunteer workers are organized into groups known as Air Raid Protective Services, and are under the direction of a Commander of the Citizens Defense Corps. Groups are designated as Air Raid Wardens, Auxiliary Policemen and Firemen, Public Works and Utilities Squads, Emergency Medical Service, Fire Spotters, Staff Corps, and others to secure an integrated organization which will function as a whole in the event of an air raid.

The Professional Engineer has a very important place in this organization. His inherent ability as an organizer, his trained mind as a planner, and his thorough methods in accomplishing results, make the Engineer a vital cog in any Council of Defense. Many Engineers have accepted this responsibility and are now in charge of protective services, some are Commanders of their council, and others are serving in the capacity which has been delegated to them.

There are certain groups which need the trained Engineer more than others. The Public Works section is charged with the job of repairing all municipal facilities disrupted during the air raid. The water supply, sewerage plants, streets and roads, and so forth must be placed in service as soon as possible. Public Utilities, while using largely their own personnel, will require additional trained persons in the event of wholesale destruction. The Staff Corps, assistants to the Commander, will welcome the services of the trained Engineer. Under the Senior Gas Officer, who is responsible for the training and organization of a group of technical experts in gas identification and decontamination, the Engineer, especially the Chemical or Sanitary Engineer, is best fitted for this work. While poison gasses have not been used in this war, there is no assurance that the enemy will not use them, if purely for the demoralizing effect upon the untrained or unorganized population.

The responsibility for the protection of our civilian population is one that the Engineer cannot put aside on the "let George do it" assumption. Every person, who can make any contribution to this work, must do so and the Engineer, who has not registered for any of the Civilian Protective Services, should register at once. The work of these trained volunteer workers is a great contribution to our war effort. The assurance that the "home front" is prepared is important to the morale of our armed forces, the factory and war industry workers, and to every citizen.

GET IN THERE AND PITCH—NOW!!!

The Canton Regional Section has received a Post Office order for 1942 dues from Engineer H. H. Homrighouse, whose address is 737 Spencer Street, Honolulu, Hawaii. Engineer Homrighouse writes "Have not as yet had an opportunity to attend the Hawaiian Society, but have met many of their members as they are an active Society here, naturally, they have skipped some of their meetings since the Blitz but things are again returning to near normal. Had a grand stand seat for the Blitz as I was on the spot at the time, came through OK but do not wish to experience other one."

Engineer L. J. Hoffman, Vice-Chairman of the Northeast Section Membership Committee, reports that eighteen officer members of the Akron, Cleveland, Canton Regional, Mahoning Valley and North Central Chapters met during the summer in Akron, to discuss membership and other problems confronting the various chapters and engineers. The meeting was experimental in nature and the discussion was permitted to develop spontaneously in order to obtain a cross-section of the thinking of these officers and chapters. President Kennedy spoke of the work of the various committees in advancing the cause of the Engineer, especially the Committee on Salaries and the Committee on Violations. It is interesting to note that twenty minutes of the meeting, from 9:30 to 9:50, was conducted in the dark on account of an Akron practice blackout.

Personal Notes

Governor Bricker has appointed Robert N. Waid, member of the O.S.P.E., as a member of the Ohio State Board of Registration for Professional Engineers and Surveyors, to succeed Julian E. Tobey who has resigned.

The new member of the Board is one of the best known engineers in Ohio. He has been active in the Ohio Society for many years, and served as president in 1922.

Whenever any service for the Society has been needed that he was asked to do Bob Waid has always responded. He has served as chairman on many O.S.P.E. committees. At present, among other duties, he is a member of the Legislative and of the Salary and Reclassification Committees.

Ohio State University conferred the degree of Engineer on Waid in 1909. He served for a time on the faculty of the civil engineering department at the University. Then he entered the State Highway Department and served in many capacities. He was division engineer on the construction of the first sections of the Old National Road between Columbus and Wheeling about 1915. He rose to be Director of Highways in the administration of Governor Cooper, 1929-1931. Since then he has been in private business as a co-partner in The Ben-Tom Company at Columbus. He is a member of the American Society of Civil Engineers and of other technical societies and civic organizations.

Congratulations to Bob Waid, engineer and citizen.

Engineer Jess C. Sherrick, Secretary-Treasurer of the Canton Regional Society, is serving as Chairman of the Stark County Council of Defense and from personal observation is doing an excellent job of organizing this county for Civilian Defense.

Friends of Engineer Arthur E. Hutchinson, Smoke Abatement Engineer for the City of Cleveland, will be pleased to know that he was elected President of the Smoke Prevention Association of America at their 36th Annual Convention held in Cleveland, June 2nd to 5th, 1942.

Thomas H. Sauter, a very active member of the Akron Chapter, is receiving congratulations from his many friends because of his recent appointment as City Engineer of Cuyahoga Falls.

It is with sorrow that we report the recent death of Engineer A. W. Aitken, a member of the Dayton Society of Professional Engineers. He is survived by his widow, to whom we extend our deepest sympathy.

We also regret to announce the death of City Utilities Director William Denton Young of Cleveland. The death of Mr. Young was the first in the ranks of the past presidents of the Cleveland Society of Professional Engineers. President Lucas appointed a special committee to represent the Society at the funeral services. On this committee were John O. McWilliams, Harvey R. Hawgood, George E. Barnes, F. C. Tolles, and William C. Kammerer, who are past presidents of the Society, Herman Eisele and Louis L. Drasler, fellow officers during Mr. Young's term of office as president, and Samuel F. David, C. T. Elder, Fred Gaub, and F. J. Schwemler.

Engineer Young was not only director of one of the city's largest departments but became interim representative of the city during the transfer of the Cleveland Railway Co. to the City Transit System. "I'm deeply grieved and shocked by the news of Mr. Young's death," said Mayor Lausche. "In the all-to-brief period that we worked together, I learned to respect and admire him. Quietly and without ostentation, he unflinchingly faced a tremendous job."

Notice

We are presenting with this issue of the Bulletin your copy of the report of a special Committee of the Ohio Society entitled "Salaries of Engineers in Public Employment." The members of this Committee and all who cooperated deserve commendation for their assistance, but special mention should be made of Engineer Lloyd A. Chacey, Secretary of the Committee, for the vast amount of diligent work performed in classifying and tabulating information and preparing the many charts and graphs.

PENNSYLVANIA

Society Appeals to Engineers

The following appeal has just come to the attention of the American Engineer,

PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS
TWENTY-NINE SOUTH THIRD STREET - HARRISBURG
MEMBER
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

September 18, 1942.

Dear Professional Engineer:

"In time of War prepare for Peace!"

Today you are secure in your position—Engineers are in demand, receiving good pay—the demand exceeds the war needs. When peace comes—what then? Will the Engineers face again the bitter experience of a post-war depression, large scale unemployment, starvation wages and Engineers at a dime a dozen? Who knows? What can be done about it?

You can do something by joining the National Society of Professional Engineers, for this Society is the only organization which:

(1) Represents the entire profession thruout the nation—civils, mechanicals, electricals and all others regardless of specialization.

(2) Voices the considered and united opinion of all Professional Engineers in matters pertaining to the profession, especially in the field of local, state and federal legislation.

(3) Presents the only opportunity for the profession to maintain its proper relationship with the other learned professions and with the public.

As you may know, the National Society of Professional Engineers is:

(1) Concerned with safeguarding the individual freedom of the Engineer.

(2) Opposed to the domination of the Engineer by labor, industry or government.

(3) Prepared to fight for the proper recognition of the profession.

When we say "fight" we mean it, for there are those who persist in their efforts to gain control of the profession, not for its good but for the furtherance of their own selfish interests. These powerful groups are bent on the destruction of the engineering profession as such.

This is not the time to stand aloof as an individual and be overwhelmed by interests inimical to the profession. Now is the time to build the organization, to make it strong, so that it can meet this challenge—not tomorrow, but today—for tomorrow may be too late.

So we appeal to YOU for YOUR help for YOUR profession. We urge you to join the N.S.P.E. Use the enclosed application blank and send us your check in the sum of $5.00, for the payment of dues until January 1, 1943. This will entitle you to membership in (1) A Local Chapter (2) The Pennsylvania Society of Professional Engineers and (3) The N.S.P.E. You will receive the publication "The American Engineer."

Fellow Engineers—"In time of War prepare for Peace!" JOIN NOW.

Yours for the Profession,
RITCHIE LAWRIE, JR., President
Pennsylvania Society of Professional Engineers

P.S. PLEASE SEND YOUR APPLICATION TO
The P.S.P.E., 29 So. 3rd St.,
Harrisburg, Pa.

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RULES AND REGULATIONS
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(Last Amendment May 12, 1941)

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The certificate of registration issued by the Board shall be uniform in all cases, but for convenience and reference and for the purpose of determining qualifications for reciprocity, all applicants will be classified in one of the five (5) following classes:

Class 1—Comprises applicants who apply for registration under Subsection (2), Section 12.

Class 2—Comprises applicants who apply for registration under Subsection (b), Section 12.

Class 3—Comprises applicants who apply for registration under Subsection (c), Section 12.

(*Note: As the Attorney General, February* 12, 1938, *gave to the Board an opinion that "the clause 'and was not practicing professional engineering at the time this Act becomes effective' is so illogical and repugnant to the Act in its entirety as to be void and inoperative" the Board is considering applications under this section without regard to that clause.*)

Class 4—Comprises applicants who apply for registration under Section 18.

(*Note: After May* 28, 1938, *by the statute, applications for registration under Section* 18 *cannot be considered by the Board.*)

(*Note: After May* 28, 1942, *by the statute, applications for registration under Section* 12*c cannot be considered by the Board.*)

Class 5—Comprises applicants who apply for registration under Section 21 (by reciprocity.)

Rule II—Form of Application

All applications for registration shall be made on printed form provided by the Board and no applications made otherwise will be accepted. In event the printed form does not contain sufficient space for the evidence to be submitted additional sheets may be attached, which shall be of plain white paper, 8½ by 11 inches in size. Such additional sheets shall be typed on one side only. Applications must be clearly typewritten in black, suitable for photostatic copy, and all questions provided for, or not accom-

panied by the required fee will be returned with a statement of the reason for return. Each copy of the application shall be accompanied by an unmounted, recognizable recent photograph of the applicant, with date taken or photoengraving of same (size 2 by 2½ inches overall with face not less than ¾ inches wide).

Applications shall be subscribed and sworn to before a Notary Public or other person qualified to administer oaths.

The conditions set out in the Application Form, including the Code of Ethics, shall be construed to be a part of the Rules and Regulations.

Rule III—Fees

Fees shall be transmitted by money order, or certified check payable to Carl L. Svensen, Secretary, 511 Ewell Nalle Building, Austin, Texas. The Board assumes no responsibility for loss in transit of cash remittances. Applications not accompanied by the proper fee will be returned to the applicant.

An application for registration as a professional engineer shall be accompanied by the required fee as follows:

Classes 1 and 2-A fee of $15.00, which is retained by the Board, regardless of whether application is approved or rejected.

Class 5-A fee of $10.00, together with a certificate of qualification, or registration, as per requirement in Section 21 of the Act.

Upon notification that applications under Classes 1, or 2 have been approved by the Board, the remaining $10.00 of the fee shall be remitted to the Secretary of the Board before certificate will be issued.

Rule IV—References

Upon receipt of an application, the Secretary may have prepared an abstract of the information contained therein and transmit a copy thereof to each reference, together with a copy of the Board's uniform questionnaire and form letter for his reply. Applicants will note that three or more of references shall be professional engineers.

Any Board Member may make an independent investigation of the applicant's qualifications and report his findings to the Board.

No statement of a reference will be accepted by the Board unless such statement answers fully the questions submitted by the Board, and bears the signature of the reference. Until such time as the required replies from the references are received, the Board will not take action on the application.

In cases where undue delay takes place in the reply from the references, the applicant will be notified by the Secretary of the Board.

Rule V—Branches of Engineering

The Act makes no specific designations as to the branches of engineering practice for which certificates of registration shall be issued. The Board will recognize each accredited branch of engineering for which degrees are offered in the curricula of engineering schools and colleges approved by the Engineers' Council for Professional Development, and will issue certificates of registration to applicants who demonstrate their qualifications for practice in their particular branch under the provisions of the Act and in conformity with the rules and regulations of the Board.

To determine who is a professional engineer and who has engaged in professional engineering as defined in this Act the Board will recognize, among other branches of engineering practice, the following: Civil, Mechanical, Electrical, Mining and Metallurgical, Petroleum and Natural Gas, Structural, Geological, Chemical, Aeronautical, Agricultural, Ceramic, and Textile.

Rule VI—Definitions of Terms

The term "Professional Engineer" when construed by the Board shall mean a person who by reason of his knowledge of mathematics, the physical sciences, and the principles of engineering acquired by professional education and practical experience is qualified to engage in engineering practice.

The term "Professional Engineering" when construed by the Board shall mean professional service which may include consultation, investigation, evaluation, planning, designing, or responsible supervision of construction, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works or projects wherein the public welfare, or the safeguarding of life, health and property is concerned or involved, when such professional service requires the application of engineering principles and the interpretation of engineering data.

The term "Responsible Charge of Work" when construed by the Board shall mean the technical control and direction of the investigation, design and construction of engineering works requiring initiative, engineering ability, and the use of an independent judgment.

The Board, in passing on each of these requirements as defined, will carefully weigh the evidence of experience submitted by the applicant and the replies received from his references.

Rule VII—Schools Approved by the Board

Engineering schools, or colleges approved by the Board are those which require for entrance, graduation from an accredited high school or preparatory school (or equivalent by passing of advanced standing examinations), which offer a four year's course leading to a degree of bachelor of science in recognized branches of engineering, or its equivalent, and which are approved by the Engineer's Council for Professional Development.

The Board, in its discretion, may give consideration or approval to applications made under Section 12, Subsection (a) of the Act, from individuals who have received degrees in engineering from schools or colleges other than those covered by the limitations set out in the foregoing paragraph where applicant's experience and accomplishments in his special field justify special consideration by reason of his standing in the engineering profession.

Rule VIII—Examinations

Examinations may be oral, written, or both oral and written, except of applicants under Section 12 (b) in which examinations will be either oral and written, or written. Examinations whether oral, written, or both, will be held at such time and place as the Board may designate. Applicants of whom examinations will be required will be notified to this effect at least thirty (30) days in advance.

In general the examination will be divided into two parts: Part One will cover the subject matter of a general engineering education or training. If the applicant is a graduate from an engineering school which the Board in its discretion may approve, Part One may be waived. Part Two will cover that branch of engineering in the practice of which the applicant is engaged as indicated by his experience record. Where possible the usually recognized branches of engineering will be considered in the preparation of the Examination; however, when the education, or the experience of the applicant has been in a highly specialized field, the Board reserves the right to conform the nature and extent of the examination to the particular qualifications of the applicant. The Board shall further reserve the right to determine the extent and character of the examination of the applicant in the light of his experience, special qualifications, or outstanding accomplishments.

All examinations will be in the English language.

Failure of any applicant to take the examination after having been notified by the Board to appear for such examination will be regarded as failure to receive a passing grade and will be so entered up in the records of the Board. This will result in rejection of the application upon action by the Board.

A brochure giving information regarding examinations will be sent to all applicants to whom the Board passes to registration under Section 12 (b) subject to passing the required examination.

(*Note*: *The Board sends to all who request application blanks together with the application blanks a copy of the engineering registration law, of the Board's By-Laws, and these rules are regulations for guidance in the preparation of applications. As with all matters which have to do with professional engineering registration in Texas, information, if desired, as to the divisions of the* 12 (*b*) *examination, the value of each, or other pertinent data, may be obtained from the offices of the Board.*)

Rule IX—Disposal of Applications

When the Board, after due consideration of an application and of information pertaining thereto, is satisfied that the applicant is eligible for registration under the particular classification under which the application is made, the applicant will be voted registration. If the finding of the Board is that the applicant is not eligible for registration under the classification under which the application is made, the Board may vote the applicant registration in such other classification, as it finds that he is eligible. The applicant will be notified of the action of the Board by the Secretary.

Rule X—Rejected Applications

If an application is rejected, the Board will advise the applicant in accordance with provisions of the Act.

Rule XI—Registration Number

At the time an applicant is voted registration by the Board, he will be assigned a serial number. These numbers will be issued consecutively in the order in which the applications are

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Rule VII—Schools Approved by the Board

Engineering schools, or colleges approved by the Board are those which require for entrance, graduation from an accredited high school or preparatory school (or equivalent by passing of advanced standing examinations), which offer a four year's course leading to a degree of bachelor of science in recognized branches of engineering, or its equivalent, and which are approved by the Engineer's Council for Professional Development.

The Board, in its discretion, may give consideration or approval to applications made under Section 12, Subsection (a) of the Act, from individuals who have received degrees in engineering from schools or colleges other than those covered by the limitations set out in the foregoing paragraph where applicant's experience and accomplishments in his special field justify special consideration by reason of his standing in the engineering profession.

Rule VIII—Examinations

Examinations may be oral, written, or both oral and written, except of applicants under Section 12 (b) in which examinations will be either oral and written, or written. Examinations whether oral, written, or both, will be held at such time and place as the Board may designate. Applicants of whom examinations will be required will be notified to this effect at least thirty (30) days in advance.

In general the examination will be divided into two parts: Part One will cover the subject matter of a general engineering education or training. If the applicant is a graduate from an engineering school which the Board in its discretion may approve, Part One may be waived. Part Two will cover that branch of engineering in the practice of which the applicant is engaged as indicated by his experience record. Where possible the usually recognized branches of engineering will be considered in the preparation of the Examination; however, when the education, or the experience of the applicant has been in a highly specialized field, the Board reserves the right to conform the nature and extent of the examination to the particular qualifications of the applicant. The Board shall further reserve the right to determine the extent and character of the examination of the applicant in the light of his experience, special qualifications, or outstanding accomplishments.

All examinations will be in the English language.

Failure of any applicant to take the examination after having been notified by the Board to appear for such examination will be regarded as failure to receive a passing grade and will be so entered up in the records of the Board. This will result in rejection of the application upon action by the Board.

A brochure giving information regarding examinations will be sent to all applicants to whom the Board passes to registration under Section 12 (b) subject to passing the required examination.

(*Note*: *The Board sends to all who request application blanks together with the application blanks a copy of the engineering registration law, of the Board's By-Laws, and these rules are regulations for guidance in the preparation of applications. As with all matters which have to do with professional engineering registration in Texas, information, if desired, as to the divisions of the* 12 (*b*) *examination, the value of each, or other pertinent data, may be obtained from the offices of the Board.*)

Rule IX—Disposal of Applications

When the Board, after due consideration of an application and of information pertaining thereto, is satisfied that the applicant is eligible for registration under the particular classification under which the application is made, the applicant will be voted registration. If the finding of the Board is that the applicant is not eligible for registration under the classification under which the application is made, the Board may vote the applicant registration in such other classification, as it finds that he is eligible. The applicant will be notified of the action of the Board by the Secretary.

Rule X—Rejected Applications

If an application is rejected, the Board will advise the applicant in accordance with provisions of the Act.

Rule XI—Registration Number

At the time an applicant is voted registration by the Board, he will be assigned a serial number. These numbers will be issued consecutively in the order in which the applications are

approved by the Board. The applicant will be advised of his serial number in the notice sent him by the Secretary. He will also be instructed to secure a seal of the type specified by the Board and bearing his name and serial number. As soon as the registrant has secured his seal, he shall make an imprint thereof on a form to be furnished by the Board and shall return the same to the Board for its files.

Rule XII—Seals

Seals of two different sizes will be acceptable, a pocket seal the size commercially designated as a 1⅝ inch seal, or a desk seal, commercially designated as a 2 inch seal.

Rule XIII—Certificates of Registration

As soon as possible after the Board has received from an applicant, who has been notified of the approval of his application and of his serial number, a satisfactory imprint of his seal and payment of his registration fee, a certificate of registration will be issued, signed by the Chairman, and the Secretary, bearing the seal of the Board, and also bearing on its face the serial number of the registrant.

No registrant shall hold more than one certificate of registration. In case of change in the section under which registration is voted any registrant he shall have delivered to the office of the Board such certificate as is held by him before a certificate evidencing the later registration is put in his possession.

The application of any applicant who fails to complete his registration as provided for hereinabove within a period of six months after notice is mailed to him by the Board that he has been voted registration shall be rejected upon action by the Board.

Rule XIV — Application from States Not Providing for Reciprocal Rejection Privileges

Applicants who are legal residents of states which do not have registration laws or from states, the registration laws of which do not provide reciprocal privileges, may be registered in this State only upon the basis of the provisions of Section 12, Subsections (a) and (b) of this Act. If at any time any state shall repeal its registration law, or withdraw reciprocal registration privileges of Texas registrants, all registration under Section 21 of this Act, and based upon certificates of registration from the state in question may be revoked by action of the Board.

Rule XV—Expirations and Renewals

Stipulations with reference to expirations and renewals of certificates of registration are set out in Section 16 of the Act.

Rule XVI—Revocation and Reissuance of Certificates

Under the provisions of the Act certificates of registration may be revoked by the Board for cause and after proper hearings as fully set out in Section 22 of the Act. In defining misconduct in the practice of professional engineering as a registered professional engineer the Board will consider among other things the Code of Ethics adopted by the Board and made a part of the application form.

A registrant requesting a new certificate of registration, to replace a certificate, under the provisions of the last paragraph of Section 22 of the Act, shall surrender to the Board, if possible, the original certificate held by him and shall file with his request a sworn affidavit setting out the reason for his request so that the Board records will reflect the reason for its issuance of a new certificate.

* * * *

WEST VIRGINIA

State University Dedication

Morgantown, W. Va.—As a fitting tribute to the opening of the institution's seventy-sixth academic year, West Virginia University on October 16 and 17 will dedicate its new million-dollar Mineral Industries Building, called by competent authorities the finest structure of its nature in the United States.

An appropriate as well as essential addition to the State University's campus in view of West Virginia's vast coal, oil and gas, chemical, and ceramic industries, completion of the building is especially timely because of the vital role the State is playing at the present time in the nation's war effort.

The dedication, which is expected to attract specialists in the fields involved from throughout the United States, will be held October 16 at 2 p.m. Following registration, the morning of that day will be devoted to an inspection of the building. The evening and all of the next day will be given over to various scientific and industrial groups which have scheduled their annual meetings for this occasion.

WYOMING

State Board Subscribes

An interesting and commendable action upon the part of the Wyoming State Board of Examining Engineers is noted in the following item from L. C. Bishop, Secretary of the Board:

"On August 31, 1942, the Wyoming State Board of Examining Engineers purchased a $1000 Defense Bond with funds which were available for that purpose.

"Unfortunately, in some states the receipts from Registration are turned over to a general State Fund and are not available to the Boards."

ENGINEERS IN NAVY DEPT.

(*Cont. from page* 7)

DEPARTMENT OF THE NAVY
Office of the Assistant Secretary
Washington

MR. E. A. HOLBROOK, September 3, 1942
President, National Society of Professional Engineers,
106 State Hall, Pittsburgh, Pa.

Dear Sir:

Receipt is acknowledged of your letter of August 28, 1942, addressed to the Secretary of the Navy, concerning the payment of overtime to employees of the Navy Department in professional ratings.

With certain exceptions, per annum employees are entitled to overtime pay. If certain individuals believe they are not receiving overtime pay to which they are entitled, they should present the matter to the head of the office at which they are employed. Union membership is not necessary in order to obtain a hearing at any Naval establishment.

In order that the office of the Secretary may determine whether an individual is entitled to overtime pay, it would be necessary that full details be supplied as to the name of the person, the dates involved and the Naval activity at which the individual is employed.

Yours very truly,
(Signed) RALPH A. BARD.

THE ASSISTANT SECRETARY OF THE NAVY
Washington

MR. E. A. HOLBROOK, September 7, 1942.
President, National Society of Professional Engineers,
106 State Hall, Pittsburgh, Pa.

Dear Mr. Holbrook:

This is to acknowledge your letter of 27 August, addressed to the Secretary of the Navy, drawing the attention of the Navy Department to the National Society of Professional Engineers as a society representing the interests of professional engineers, including those employed in our Navy Shore Establishments.

Let me assure you that we fully appreciate the contributions of these Navy engineers toward our goal of winning the war, and that their satisfactory professional and working circumstances are a matter of primary concern to the Navy.

The forthcoming meeting with representatives from the working forces of our Naval shore establishments is not for the purpose of taking up any business matters or questions regarding the status of working conditions of any groups. It will be confined to giving our people information about the War and the importance of the work they are doing in supplying and equipping our armed forces.

Either I or Rear Admiral C. W. Fisher of my office will be glad to discuss with you at any time the matters you refer to, namely, the status and position of engineers in the Naval service. This can be done in writing or by a visit from you or other members of your society at almost any time convenient to you.

Sincerely yours,
(Signed) RALPH A. BARD.

DO BARRIERS EXIST

(Continued from page 5)

any rate) succeeded in producing for itself.

The statement that Australia, a continent, has less people than New York City may be approximately true, but has nothing to do with the argument that this has hindered the happiness of millions. I feel sure that a great many of us who know both New York City and Australia would agree that the average happiness of the New Yorker is far below that of the Australian. And while New York is an important manufacturing center, no small part of its population must be regarded as parasitic upon the body of the United States. There are many of us who believe that these enormous agglomerations of population are normally unhealthy and that New York is no exception; and all of us might well hope that the United States never becomes as densely populated as Japan, or New Zealand as thickly populated as Great Britain.

Let us rather rejoice that there are still countries none of whose cities begin to approximate in size New York or London, and where, even though some may regret it, there are still large areas covered by natural vegetation; and let us hope that either increasing wisdom or the force of circumstances may enable us to avoid the condition condemned in Bible and Koran alike of multiplying the people and not increasing the joy.

PUBLIC RELATIONS

(Continued from page 4)

published and he personally should receive proper ethical credit in published reports.

Remember that every newspaper is hungry for interesting news and the more local slant it has, the more they want it for local consumption. Many professional men feel that the local press overlooks them while other members of their profession are given undue credit. Remember that a newspaper is always shorthanded. The staff is usually overworked covering the essential day by day happenings and often cannot spend enough time to know and reort on everything of interest that is going on. Newspapers depend to a very large extent upon the individuals connected with every happening of interest to report or tip the paper off. Therefore when you see long eports of one person's achievements and little or nothing about your own, remember that you have been at fault.

When a contract is let for any local construction, when an unusual engineering problem connected with it is overcome, when the project is completed, when a local firm is put in charge of a large out-of-town job, that is all news for your local paper, but often the only way they learn of it is because the man in charge of the job tips them off. Therefore you or somebody in your firm should feel it their duty to call your local newspaper and let them know occasionally the progress of every important job you are connected with. Ask for the city editor and he will assign a reporter to secure full details. If you think that interesting pictures can be obtained, tell the city editor the status of the job and he will probably assign a staff photographer to accompany the reporter.

Getting Accurate Reports

In giving data concerning engineering and technical features of a construction job and the problems which its completion entailed, it is usually wise to have typed copies of all the details available for the reporter. The longer and more detailed this is, provided it concerns things that may be of interest to the public, the more chance there is of having a complete and accurate article published. Don't overlook using your personal name and firm connection. Other details such as the cost, area covered, reasons why this project is unusual, difficulties encountered due to war conditions, how non-essential materials were substituted for critical war materials, how the usual construction time was reduced and anything else you can think of should be included in the written report for the reporter to use in preparing his story.

Such information is of equal interest to the trade and professional magazines and will often be published with photographs if you provide them. If the job has particularly unusual features, often the magazine will expand your information into a feature article.

Engineers in common with many professional men are often unduly modest and certainly are seldom aggressive in giving out data concerning their own achievements. There is nothing which anybody can regard as unethical in an engineer informing the public about projects he has been connected with which are of general interest and there is certainly much to be gained by the individual as well as the profession as a whole by the publication of more accurate reports on engineering projects.

Recently a new element has been injected into the public relations program. That of censorship. All editors are fully informed of the details of what the government regards as publication of information useful to the enemy. However, when in doubt the engineer can always consult the local representative of the government agency with which he deals as to how much information it is advisable to disclose. In general no data concerning production capacity of plants, no general photographs of a wide territory showing the location of a project vital to the war effort should be given out. However, editors can usually be relied upon to delete any data that might be useful to the enemy.

When an engineer delivers a talk before any group which is not of a confidential nature, copies of the talk should be made available to the press. Most inaccuracy in published reports can be attributed to the fact that the man in question did not provide the press with a written copy of his talk or other information given verbally so that the publication can quote verbatim, rather than from memory. Providing such copies also usually results in a more detailed report. In some cases a reporter cannot be present but the newspaper will welcome the sending of advance copies of talks delivered or reports of meetings by special messenger. However, it should be remembered that newspapers cannot use material which is more than a few hours old. It is always best to send copies to the local papers in advance of delivering the talk. For example, an afternoon paper must have material not later than 11 A.M. concerning happenings on that day. If received in the afternoon, they cannot be used the same day and editors usually will not use the material a day late. All material sent to newspapers and other publications should show clearly from whom it comes and shoud give the telephone number of an individual who can be reached for further information.

There are many other forms of publicity which engineers should be aware of. One of the most important of these is the news reels. A very large part of the material used in "shorts" are motion pictures of the progress or opening of large construction jobs. Here again, the news reel editors depend upon the individuals and organizations involved to tip them off to important events. Your local theater manager can give you the names and addresses of the nearest offices of the news reels. They should always be informed by wire of suitable events and proper co-operation given in their obtaining the necessary shots.

Organization Publicity

Every organization should have a publicity committee. A fundamental part of the duties of this committee is press contact. A report of every meeting should be sent to the city editors of all local papers and this should include, if possible, a copy of any addresses or talks that are made which may be of general interest. Speakers should be encouraged to give the publicity committee an advance copy of their talks. Unless events of unusual interest are expected, such copies should be sent to the local papers the same day the event takes place. Most papers will not use such reports reaching them a day or two later. Where a new program or other important action is taken, somebody should be delegated to call the city editors of all papers immediately at the close of the meeting. Morning paper staffs do their work between 6 and 12 in the evening. Afternoon papers can be called the next morning.

Most professional and other organizations undertake work for the general welfare of their community and proper newspaper publicity on such a program should be considered a basic part of it. Don't expect your newspapers to know what you are doing unless you tell them.

(Continued on Next Page)

The election of local members to national officers or directors of a national organization such as the National Society of Professional Engineers is always a matter of interest to local newspapers and shows the importance of the local unit in the national picture.

Careful arrangements should be made for handling the publicity for national and state conventions. Here it is particularly important that copies of all talks and addresses be made available in advance to all papers as well as the national press associations such as the Associated Press, United Press and International News Service. The offices of the national news services are usually located with the local papers and the city editor will tell you whom to contact.

Don't look down on the man in your own or other profession who uses means to secure recognition for himself, his firm and his organizations. With most commercial advertising means closed to the professional man, he must use other ways of bringing his ability and accomplishments to the attention of those who need such services. Most successful engineers use one or more of the methods which have been outlined in this article.

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